AFICIO 650

SP5

(Machine Code: A229)

SERVICE MANUAL

TS Dept. Imaging System Business Group
RICOH Co., LTD.

⚠IMPORTANT SAFETY NOTICES

PREVENTION OF PHYSICAL INJURY

1. Before disassembling or assembling parts of the copier and peripherals, make sure that the copier power cord is unplugged.
2. The wall outlet should be near the copier and easily accessible.
3. Note that some components of the copier and the paper tray unit are supplied with electrical voltage even if the main power switch is turned off.
4. If any adjustment or operation check has to be made with exterior covers off or open while the main switch is turned on, keep hands away from electrified or mechanically driven components.
5. If the Start key is pressed before the copier completes the warm-up period (the Start key starts blinking red and green alternatively), keep hands away from the mechanical and the electrical components as the copier starts making copies as soon as the warm-up period is completed.
6. The inside and the metal parts of the fusing unit become extremely hot while the copier is operating. Be careful to avoid touching those components with your bare hands.

HEALTH SAFETY CONDITIONS

1. Never operate the copier without the ozone filters installed.
2. Always replace the ozone filters with the specified ones at the specified intervals.
3. Toner and developer are non-toxic, but if you get either of them in your eyes by accident, it may cause temporary eye discomfort. Try to remove with eye drops or flush with water as first aid. If unsuccessful, get medical attention.

OBSERVANCE OF ELECTRICAL SAFETY STANDARDS

1. The copier and its peripherals must be installed and maintained by a customer service representative who has completed the training course on those models.
2. The NVRAM on the system control board has a lithium battery which can explode if replaced incorrectly. Replace the NVRAM only with an identical one. The manufacturer recommends replacing the entire NVRAM. Do not recharge or burn this battery. Used NVRAM must be handled in accordance with local regulations.

1. **SAFETY AND ECOLOGICAL NOTES FOR DISPOSAL**
   Do not incinerate toner bottles or used toner. Toner dust may ignite suddenly when exposed to an open flame.
2. Dispose of used toner, developer, and organic photoconductors in accordance with local regulations. (These are non-toxic supplies.)
3. Dispose of replaced parts in accordance with local regulations.
4. When keeping used lithium batteries in order to dispose of them later, do not put more than 100 batteries per sealed box. Storing larger numbers or not sealing them apart may lead to chemical reactions and heat build-up.

LASER SAFETY

The Center for Devices and Radiological Health (CDRH) prohibits the repair of laser-based optical units in the field. The optical housing unit can only be repaired in a factory or at a location with the requisite equipment. The laser subsystem is replaceable in the field by a qualified Customer Engineer. The laser chassis is not repairable in the field. Customer engineers are therefore directed to return all chassis and laser subsystems to the factory or service depot when replacement of the optical subsystem is required.

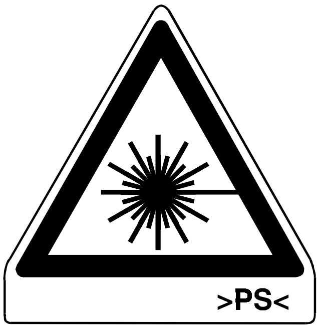
⚠WARNING

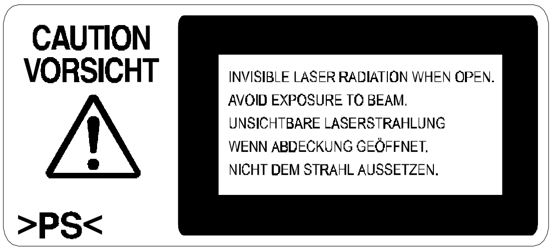
Use of controls, or adjustment, or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

⚠WARNING

WARNING: Turn off the main switch before attempting any of the procedures in the Laser Unit section. Laser beams can seriously damage your eyes.

CAUTION MARKING:




CAUTION
VORSICHT
INVISIBLE LASER RADIATION WHEN OPEN.
AVOID EXPOSURE TO BEAM.
UNSICHTBARE LASERSTRAHLUNG
WENN ABDECKUNG GEÖFFNET.
NICHT DEM STRAHL AUSSETZEN.
>PS<

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

1.1.1 COPIER ENGINE

Configuration: Console

Copy Process: Dry electrostatic transfer system

Originals: Sheet/Book

Original Size: Maximum A3/11" x 17"

Minimum B6, 5½”x 8 ½” (using ADF)

Original Alignment: Rear left corner

Copy Paper Size: Maximum
A3/11" x 17" (1st/2nd Tray, By-pass)
B4/8 ½” x 14” (3rd Tray)
Minimum
B5/8 ½” x 11” lengthwise (1st Paper Tray)
A5/51/2" x 81/2" sideways (2nd Tray)
B5/8 ½” x 11” (3rd Paper Tray)
A6/51/2" x 81/2" lengthwise (By-pass)

Tandem Paper Tray (1st Tray)
A4/B5/8 ½” x 11” sideways only

Duplex Copying: Maximum A3/11" x 17"
Minimum A5/51/2" x 81/2" lengthwise

Copy Paper Weight: Paper tray: 52.3 ~ 127.9 g/m^2, 14 ~ 34 lb
Bypass feed table: 52.3 ~ 163 g/m^2, 17 ~ 43 lb
Duplex copying: 64 ~ 104.7 g/m^2, 17 ~ 28 lb

Reproduction Ratios: 6 reduction and 5 enlargement

	Metric Version	Inch Version
Enlargement	400% 200% 141% 122% 115%	400% 200% 155% 129% 121%
Full Size	100%	100%
Reduction	93% 82% 75% 71% 65% 50%	93% 85% 78% 73% 65% 50%

Zoom:	32 ~ 400%
Copy Speed:	Max. 65 cpm (A4 / 8 ½” x 11” sideways)
Resolution:	Scanning: 400 dpi Printing: 400 dpi 600 dpi (Printer Mode Only)
Gradation:	256 levels
Warm-up Time:	Less than 330 s (from Off-mode) Less than 30 s (from Low Power Mode)
First Copy Time: (1st Tray)	Less than 3.7 s (Face up mode) Less than 5.5 s (Face down mode)
Copy Number Input:	Ten-key pad, 1 to 999
Copy Paper Capacity:	Tray 1: 1000 sheets(when used as a tandem tray) Tray 2: 550 sheets Tray 3 (LCT): 1500 sheets By-pass Tray: 50 sheets
Copy Tray Capacity: (Output Tray)	A4/8 ½” x 11” : 500 sheets (100 μm thickness paper) A3/11" x 17" : 250 sheets
Memory Capacity:	RAM: 12MB HDD: 1.7GB
Toner Replenishment:	Cartridge exchange (1220g/ cartridge)
Toner Yield:	40k copies (A4 sideways, 6% full black, 1 to 3 copying, including toner recycling ratio 20%)
Power Source:	North America: 120V, 60Hz, 20A Europe/Asia: 220 ~ 240 V, 50Hz/60Hz, 10A

Power Consumption: A229 copier (120 V Model)

	Copier only	**Full system***
Warm-up	About 1.290 kW	About 1.310 kW
Stand-by	About 0.235 kW	About 0.255 kW
Copying	About 1.560 kW	About 1.650 kW
Maximum	Less than 1.75 kW	Less than 1.75 kW
Energy Saver	About 0.210 kW	About 0.230 kW
Low Power	About 0.205 kW	About 0.225 kW
Off Mode	About 0.017 kW	About 0.017 kW

A229 copier (220 to 240 V Model)

	Copier only	**Full system***
Warm-up	About 1.250 kW	About 1.270 kW
Stand-by	About 0.245 kW	About 0.260 kW
Copying	About 1.500 kW	About 1.600 kW
Maximum	Less than 1.75 kW	Less than 1.75 kW
Energy Saver	About 0.220 kW	About 0.235 kW
Low Power	About 0.215 kW	About 0.230 kW
Off Model	About 0.017 kW	About 0.017 kW

*Full System:

Mainframe with LCT and Finisher

Noise Emission:

Sound Power Level: The measurements were made in accordance with ISO 7779 at the operator position.

	Copier only	**Full system**
Stand-by	Less than 50 dB(A)	Less than 50 dB(A)
Copying (ADF 1 to 1)	Less than 72 dB(A)	Less than 72 dB(A)
Copying (From Memory)	Less than 71 dB(A)	Less than 71 dB(A)

Sound Pressure Level: The measurements were made in accordance with ISO 7779.

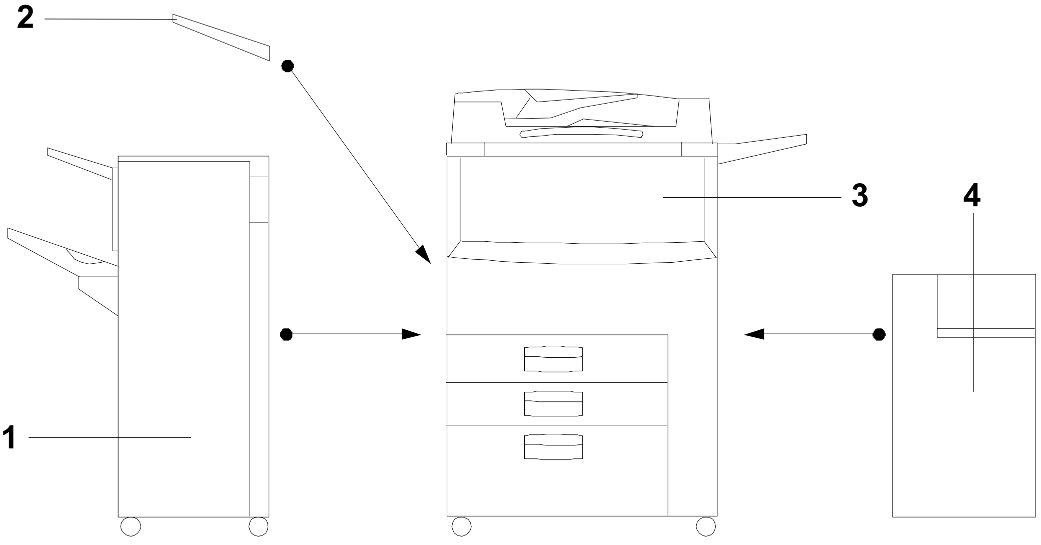
	Copier only	**Full system**
Stand-by	Less than 40 dB(A)	Less than 40 dB(A)
Copying (ADF 1 to 1)	Less than 60 dB(A)	Less than 61 dB(A)
Copying (From Memory)	Less than 59 dB(A)	Less than 59 dB(A)

Dimensions: (W x D x H)	690 x 750 x 1138 mm (27.2” x 29.5” x 44.8”) (without ADF right exit tray, and options)
Weight:	188 kg (without options)
Optional Equipment:	• Output tray (A814-01) • Finisher (A697) • Large capacity tray (A698) • Punch unit (A812)

1.1.2 ADF

Original Size:	Normal Original Mode: A3 to B6, DLT to HLT Thin Original Mode: A3 to B6 sideways, DLT to HLT Duplex Original Mode: A3 to B5, DLT to HLT
Original Weight:	Normal Original Mode: 52 ~ 128 g/m^2, 14 ~ 34 lb Thin Original Mode: 40 ~ 128 g/m^2, 11 ~ 34 lb Duplex Original Mode: 52 ~ 105 g/m^2, 14 ~ 28 lb
Table Capacity:	100 sheets (80 g/m^2, 20 lb)
Original Standard Position:	Rear left corner
Separation:	FRR
Original Transport:	One flat belt
Original Feed Order:	From the top original
Power Source:	DC 24V from the copier
Power Consumption:	70 W
Dimensions (W x D x H):	680 x 529.5 x 150 mm

1.2 MACHINE CONFIGURATION

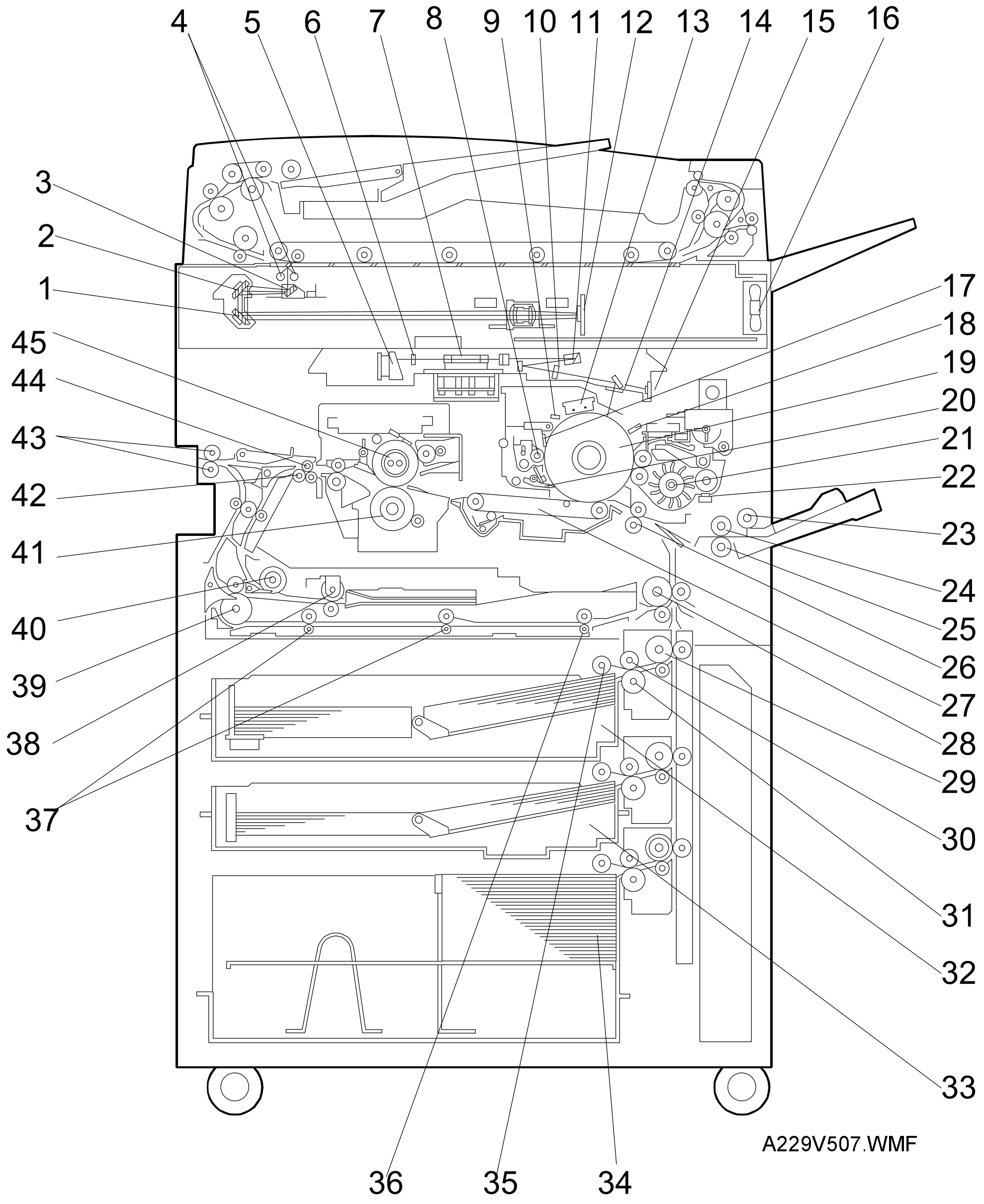


A229V501.WMF

Item	Machine Code	No.
Mainframe	A229	3
Output Tray	A814 - 01	2
Finisher	A697	1
Large Capacity Tray	A698	4
Punch Unit (Option for Finisher)	A812-17 (3 holes) A812-27 (2 holes)	

1.3 MECHANICAL COMPONENT LAYOUT

1.3.1 COPIER ENGINE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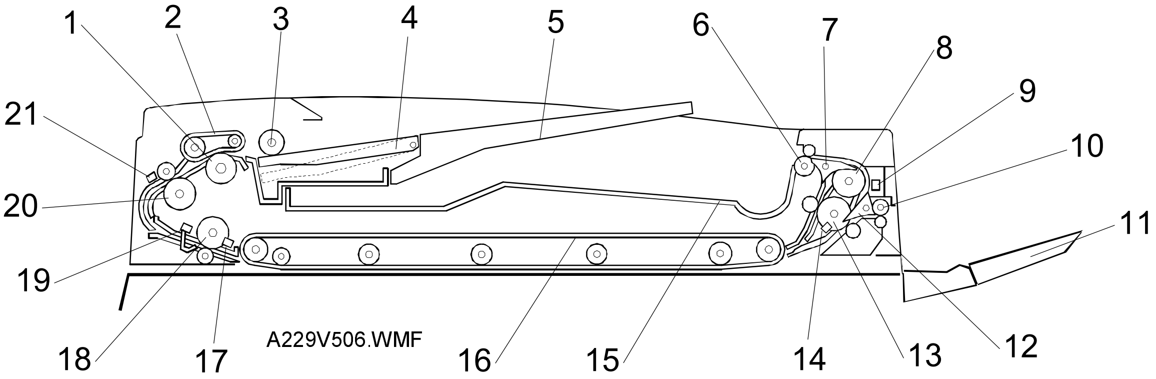
A229V507.WMF

1. 3rd Mirror
2. 2nd Mirror
3. 1st Mirror
4. Exposure Lamps
5. LD Unit
6. Cylindrical Lens
7. Polygonal Mirror
8. Cleaning Brush
9. Quenching Lamp
10. Barrel Toroidal Lends (BTL)
11. F-theta Mirror
12. SBU
13. Charge Corona Unit
14. Shield Glass
15. Laser Synchronization Detector
16. Optics Cooling Fan Motor
17. Drum Cleaning Blade
18. Drum Potential Sensor
19. Drum
20. Pick-off Pawl
21. Development Unit
22. TD Sensor
23. Pick-up Roller
24. Feed Roller (By-pass Tray)
25. Separation Roller
26. Registration Rollers
27. Transfer Belt Unit
28. Relay Roller
29. Vertical Transport Rollers
30. Feed Roller
31. Separation Roller
32. Tray 1 (Tandem Tray)
33. Tray 2 (550-sheet Tray)
34. Tray 3 (1500-sheet lage capacity tray)
35. Pick-up Roller
36. Duplex Feed Roller
37. Duplex Transport Rollers
38. Reverse Trigger Roller
39. Inverter Unit Paper Exit Roller
40. Inverter Feed Roller
41. Pressure Roller
42. Transport Rollers
43. Paper Exit Rollers
44. Curl Correction Roller
45. Hot Roller

1.3.2 ADF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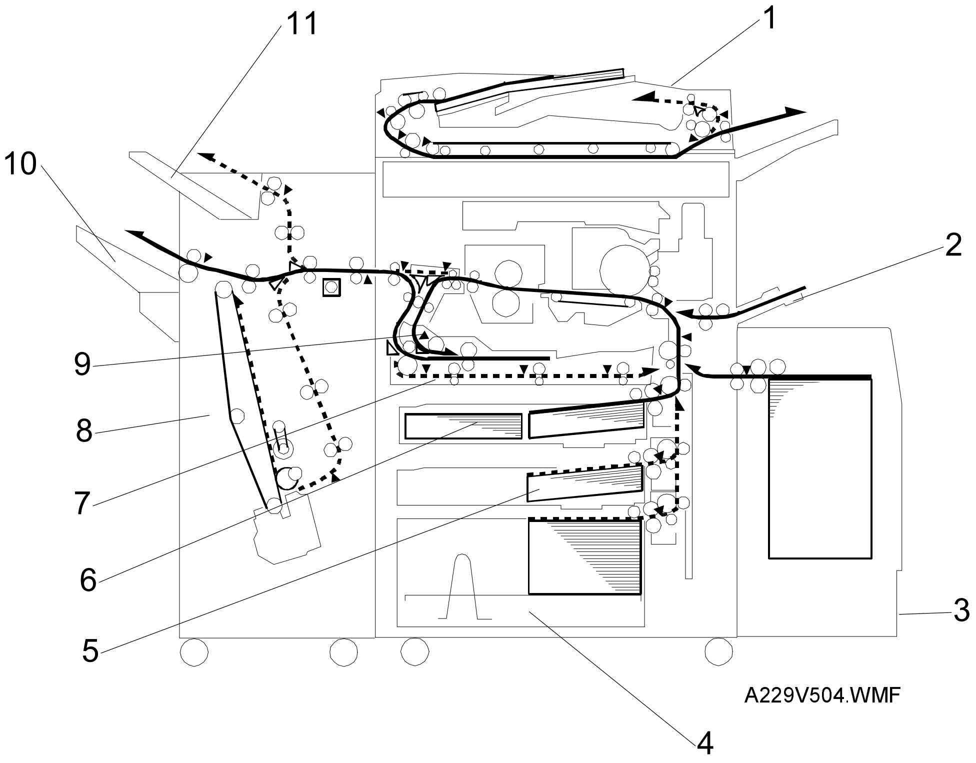
1. Separation Roller
2. Feed Belt
3. Pick-up Roller
4. Bottom Plate
5. Original Tray
6. Upper Tray Exit Roller
7. Inverter Gate
8. Inverter Guide Roller
9. Inverter Sensor
10. Right Tray Exit Roller
11. Right Exit Tray
12. Exit Gate
13. Inverter Roller
14. Exit Sensor
15. Upper Exit Tray
16. Transport Belt
17. Registration Sensor
18. Lower Transport Roller
19. Width Sensor
20. Upper Transport Roller
21. Entrance Sensor

1.4 PAPER PATH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A229V504.WMF
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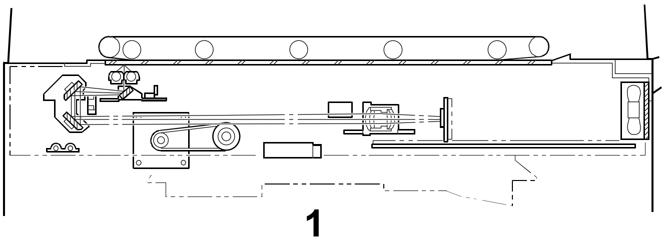
1. ADF
2. By-pass Tray
3. Optional LCT
4. Tray 3 (1500-sheet LCT)
5. Tray 2 (550-sheet Tray)
6. Tray 1 (Tandem Tray)
7. Duplex Unit
8. Finisher
9. Inverter Unit
10. Shift Tray
11. Upper Tray

1.5 COPY PROCESS



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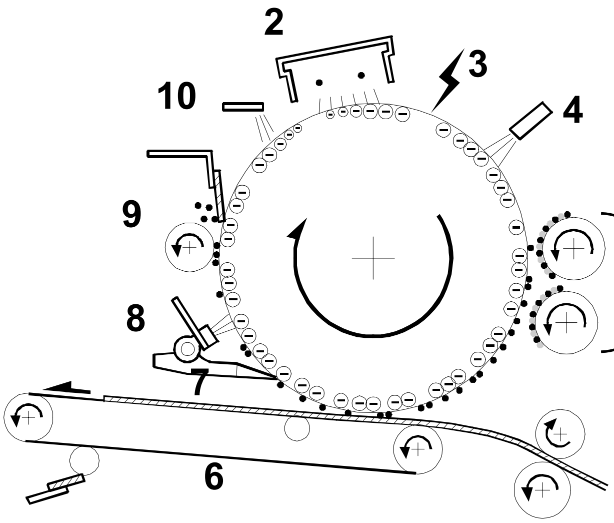


A229V510.WMF

1. EXPOSURE

Two xenon lamps expose the original. Light reflected from the original passes to the CCD, where it is converted into an analog data signal. This data is converted to a digital signal, processed, and stored in the memory. At the time of printing ,the data is retrieved and sent to the laser diode. For multi-copy runs, the original is scanned once only and stored to the hard disk.

2. DRUM CHARGE

An OPC (organic photoconductor) drum is used in this machine. In the dark, the charge corona unit gives a negative charge to the drum. The grid plate ensures that corona charge is applied uniformly. The charge remains on the surface of the drum because the OPC layer has a high electrical resistance in the dark.

3. LASER EXPOSURE

The processed data from the scanned original is retrieved from the hard disk and transferred to the drum by two laser beams, which form an electrostatic latent image on the drum surface. The amount of charge remaining as a latent image on the drum depends on the laser beam intensity, which is controlled by the SBICU board.

4. DRUM POTENTIAL SENSOR

The drum potential sensor detects the electric potential on the drum to correct various process control elements.

5. DEVELOPMENT

The magnetic developer brush on the development rollers comes in contact with the latent image on the drum surface. Toner particles are electrostatically attracted to the areas of the drum surface where the laser reduced the negative charge on the drum.

6. IMAGE TRANSFER

Paper is fed to the area between the drum surface and the transfer belt at the proper time to align the copy paper and the developed image on the drum. Then, the transfer bias roller applies a high positive charge to the reverse side of the paper through the transfer belt. This positive charge pulls the toner particles from the drum to the paper. At the same time, the paper is electrically attracted to the transfer belt.

7. PAPER SEPARATION

Paper separates from the drum as a result of the electrical attraction between the paper and the transfer belt. The pick-off pawls also help separate the paper from the drum.

8. ID SENSOR

The laser forms a sensor pattern on the drum surface. The ID sensor measures the reflectivity of the pattern. The output signal is one of the factors used for toner supply control.

9. CLEANING

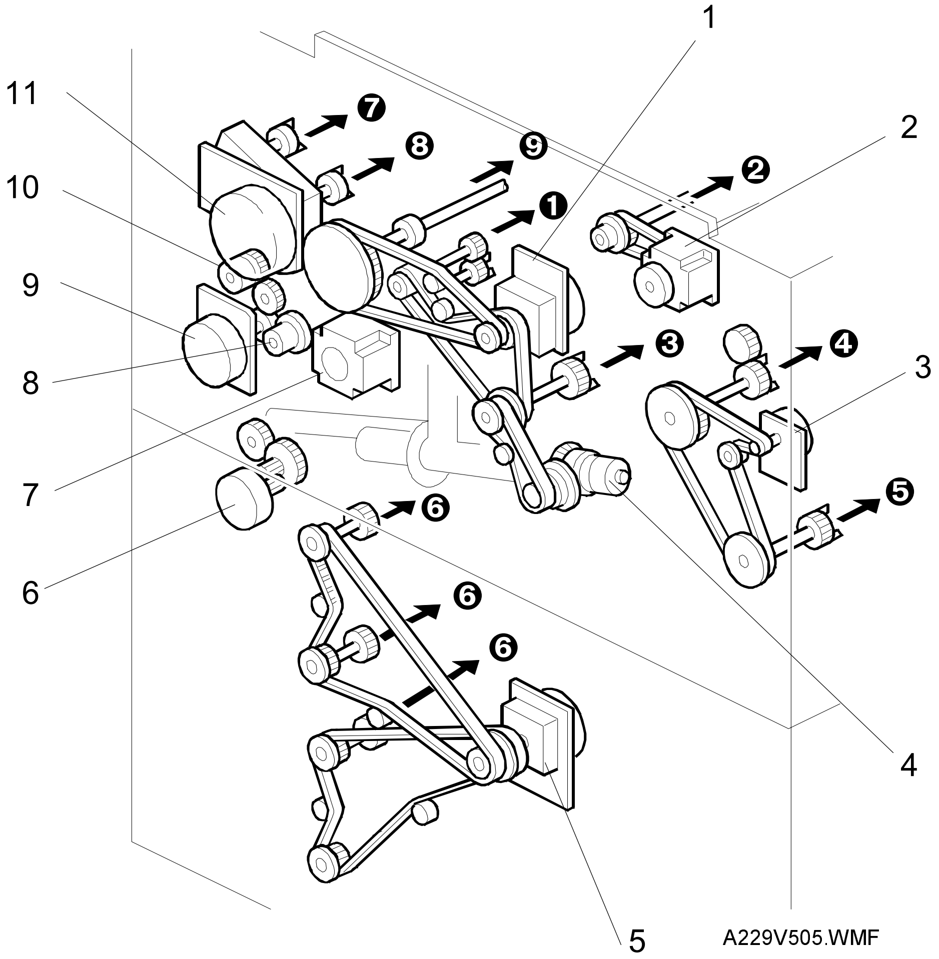
The cleaning brush removes toner remaining on the drum after image transfer and the cleaning blade scrapes off all remaining toner.

10. QUENCHING

The light from the quenching lamp electrically neutralizes the charge on the drum surface.

1.6 DRIVE LAYOUT

1.6.1 COPIER ENGINE

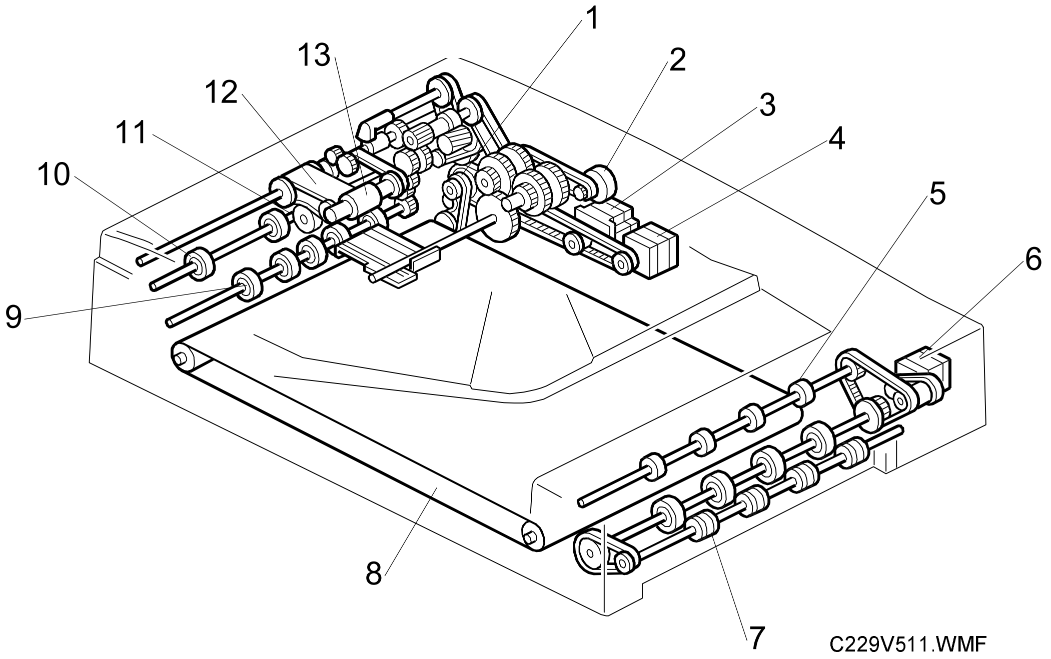


A229V505.WMF

1. Drum Motor
2. Scanner Motor
3. Fusing/Duplex Motor
4. Toner Recycling Clutch
5. Paper Feed Motor
6. Toner Collection Motor
7. Registration Motor
8. Relay Clutch
9. By-pass Feed Motor
10. By-pass Feed Clutch
11. Development Motor

❶ Cleaning Unit
❷ Scanner Unit
❸ Transfer Belt Unit
❹ Fusing Unit
❺ Duplex Unit
❻ Paper Feed Units
❼ Toner Hopper
❽ Development Unit
❾ Drum

1.6.2 ADF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C229V511.WMF

1. Pick-up Motor	8. Transport Belt
2. Bottom Plate Motor	9. Lower Transport Roller
3. Feed-in Motor	10. Upper Exit Roller
4. Transport Motor	11. Separation Roller
5. Upper Exit Roller	12. Feed Belt
6. Feed-out Motor	13. Pick-up Roller
7. Right Exit Roller	

1.7 ELECTRICAL COMPONENT DESCRIPTION

Refer to the electrical component layout on the reverse side of the point-to-point diagram for the location of the components using the symbols and index numbers.

1.7.1 COPIER ENGINE

Symbol	Name	Function	Index No.
Motors			
M1	Scanner	Drives the 1st and 2nd.	17
M2	Polygonal Mirror	Turns the polygonal mirror.	25
M3	LD Positioning	Rotates the LD unit to adjust the LD beam pitch when a different resolution is selected.	29
M4	Drum	Drives the drum and cleaning unit.	39
M5	Development	Drives the development unit.	40
M6	Toner Supply	Rotates the toner bottle to supply toner to the development unit.	48
M7	Charge Corona Wire Cleaner	Drives the charge corona wire cleaner.	90
M8	Fusing/Duplex	Drives the fusing unit, duplex unit, inverter unit, and paper exit rollers.	37
M9	Toner Collection	Transports the collected toner to the toner collection bottle.	5
M10	Toner Recycling	Drives the air pump to send recycled toner to the development unit.	8
M11	Paper Feed	Drives all feed and transport rollers in the paper tray unit.	46
M12	1st Tray Lift	Raises and lowers the bottom plate in the 1st paper tray.	44
M13	2nd Tray Lift	Raises the bottom plate in the 2nd paper tray.	45
M14	3rd Tray Lift	Raises and lowers the bottom plate in the 3rd paper tray.	135
M15	By-pass Feed	Drives the by-pass feed rollers.	43
M16	Registration	Drives the registration rollers.	42
M17	Rear Fence Drive	Moves the paper stack in the left tandem tray to the right tandem tray.	72
M18	Side Fence Drive	Opens and closes the front and rear side fences of the tandem tray.	77
M19	Jogger	Drives the jogger fences to square the paper stack in the duplex unit.	80
M20	Optics Cooling Fan	Removes heat from the optics unit.	24
M21	Polygonal Mirror Motor Cooling Fan	Removes heat from around the polygonal mirror motor.	49
M22	Exhaust Fan	Removes heat from around the fusing unit.	38

Symbol	Name	Function	Index No.
M23	Fusing Fan	Removes heat from around the fusing unit.	50
M24	Duplex Cooling Fan	Removes heat from around the duplex unit.	47
M25	PSU Cooling Fan	Removes heat from around the PSU.	59
Magnetic Clutches			
MC1	Toner Supply	Turns the toner supply roller to supply toner to the development unit.	41
MC2	Toner Recycling	Drives the toner recycling unit.	2
MC3	1st Paper Feed	Starts paper feed from tray 1.	112
MC4	2nd Paper Feed	Starts paper feed from tray 2.	115
MC5	3rd Paper Feed	Starts paper feed from tray 3.	12
MC6	By-pass Feed	Starts paper feed from the by-pass table.	100
MC7	Duplex Transport	Drives the duplex transport rollers to transport the paper to the duplex feed rollers.	67
MC8	Duplex Feed	Starts paper feed out of the duplex tray back into the machine via to the relay rollers.	70
MC9	1st Vertical Relay	Drives the 1st vertical transport rollers.	113
MC10	2nd Vertical Relay	Drives the 2nd vertical transport rollers.	116
MC11	3rd Vertical Relay	Drives the 3rd vertical transport rollers.	119
MC12	Relay	Drives the relay rollers.	103
Switches			
SW1	Main Power	Provides power to the machine. If this is off, there is no power supplied to the machine.	11
SW2	Operation	Provides power for machine operation. The machine still has power if this switch is off.	30
SW3	Front Door Safety Switch 1	Cuts the +5 V LD dc power line.	12
SW4	Front Door Safety Switch 2	Detects if the front door is open or not, and cuts the +24 V dc power line.	13
SW5	Front Door Safety Switch 3	Cuts the +5 V LD dc power line.	14
SW6	Lower Front Door Safety	Cuts the +24 V dc power line.	10
SW7	Toner Collection Bottle Set	Detects if the toner collection bottle is set or not.	7
SW8	Toner Overflow	Detects when the toner collection bottle is full.	6

Symbol	Name	Function	Index No.
SW9	Paper Size	Determines the size of paper in tray 2.	3
SW10	3rd Tray Down	Lowers the tray 3 (LCT) bottom plate	136
SW11	By-pass Tray	Detects if the by-pass tray is open or closed.	97
Solenoids			
SOL1	Transfer Belt Lift	Controls the up-down movement of the transfer belt unit.	92
SOL2	1st Pick-up	Controls the up-down movement of the pick-up roller in tray 1.	111
SOL3	2nd Pick-up	Controls the up-down movement of the pick-up roller in tray 2.	117
SOL4	3rd Pick-up	Controls the up-down movement of the pick-up roller in tray 3.	121
SOL5	By-pass Pick-up	Controls the up-down movement of the pick-up roller for by-pass feed.	98
SOL6	1st Separation Roller	Controls the up-down movement of the separation roller in tray 1.	114
SOL7	2nd Separation Roller	Controls the up-down movement of the separation roller in tray 2.	118
SOL8	3rd Separation Roller	Controls the up-down movement of the separation roller in tray 3.	122
SOL9	Tandem Lock	Releases the left tandem feed tray so that it can be separated from the right tandem feed tray.	4
SOL10	Duplex Inverter Gate	Moves the junction gate to direct copies to the duplex tray or to the paper exit.	82
SOL11	Reverse Roller	Controls the up-down movement of the reverse trigger roller.	81
SOL12	Guide Plate	Opens the guide plate when a paper misfeed occurs around this area.	102
SOL13	Inverter Gate	Opens the inverter gate during a duplex job.	96
Sensors			
S1	Scanner HP	Informs the CPU when the 1st and 2nd scanners are at home position.	35
S2	Original Width	Detects original width. This is one of APS (Auto Page Select) sensors.	36
S3	Original Length 1	Detects original length. This is one of APS (Auto Page Select) sensors.	18
S4	Original Length 2	Detects original length. This is one of APS (Auto Page Select) sensors.	20
S5	LD Unit Home Position	Informs the CPU when the LD unit is at home position.	28
S6	Drum Potential	Detects the drum surface potential.	88

Symbol	Name	Function	Index No.
S7	Toner Density (TD)	Detects the amount of toner in the developer.	95
S8	Image Density (ID)	Detects the density of the ID sensor pattern on the drum.	91
S9	Toner End	Detects toner end.	94
S10	Toner Collection Motor	Monitors the toner collection motor.	9
S11	Toner Recycling	Monitors the toner recycling and collection unit operation.	1
S12	1st Paper Feed	Controls the 1st paper feed clutch off/on timing and the 1st pick-up solenoid off timing.	129
S13	2nd Paper Feed	Controls the 2nd paper feed clutch off/on timing and the 2nd pick-up solenoid off timing.	126
S14	3rd Paper Feed	Controls the 3rd paper feed clutch off/on timing and the 3rd pick-up solenoid off timing.	125
S15	1st Tray Lift	Detects when the paper in tray 1 is at the correct height for paper feed.	132
S16	2nd Tray Lift	Detects when the paper in tray 2 is at the correct height for paper feed.	128
S17	3rd Tray Lift	Detects when the paper in tray 3 is at the correct height for paper feed.	123
S18	1st Paper End	Informs the CPU when tray 1 runs out of paper.	130
S19	2nd Paper End	Informs the CPU when tray 2 runs out of paper.	127
S20	3rd Paper End	Informs the CPU when tray 3 runs out of paper.	124
S21	By-pass Paper End	Informs the CPU that there is no paper in the by-pass feed table.	99
S22	1st Paper Near End	Informs the CPU when the paper in tray 1 is almost finished.	110
S23	2nd Paper Near End	Informs the CPU when the paper in tray 2 is almost finished.	131
S24	3rd Paper Near End	Informs the CPU when the paper in tray 3 is almost finished.	133
S25	Rear Fence HP	Informs the CPU when the tandem tray rear fence is in the home position.	79
S26	Rear Fence Return	Informs the CPU when the tandem tray rear fence is in the return position.	78
S27	Side Fence Close	Detects whether the tandem tray side fence is closed or not.	75
S28	Side Fence Positioning	Informs the CPU when the tandem tray side fences are open.	74

Symbol	Name	Function	Index No.
S29	Base Plate Down	Detects when the bottom plate is completely lowered to stop the 1st tray lift motor.	76
S30	Left Tandem Paper End	Informs the CPU when the left tandem tray runs out of paper.	73
S31	3rd Tray Paper	Detects whether there is paper or not in tray 3.	135
S32	Tray Down Sensor	Informs the CPU when the bottom plate is completely lowered, to stop the 3rd tray lift motor.	134
S33	Duplex Entrance Sensor	Detects the leading and trailing edges of the paper to determine the reverse roller solenoid on or off timing.	65
S34	Duplex Transport Sensor 1	Detects the position of paper in the duplex unit.	66
S35	Duplex Transport Sensor 2	Detects the position of paper in the duplex unit.	68
S36	Duplex Transport Sensor 3	Detects the position of paper in the duplex unit.	71
S37	Duplex Jogger HP	Detects if the duplex jogger fences are at the home position or not.	69
S38	Relay	Detects misfeeds.	104
S39	Registration	Detects misfeeds and controls registration clutch off-on timing.	106
S40	Guide Plate Position	Detects whether the registration guide plate is closed or not.	105
S41	Fusing Exit	Detects misfeeds.	107
S42	Exit	Detects misfeeds.	108
S43	Tray Paper Limit	Detects paper overflow on the output tray.	109
PCBs			
PCB1	SBICU	Controls all base engine functions both directly and through other control boards.	23
PCB2	PSU	Provides dc power to the system and ac power to the fusing lamp and heaters.	57
PCB3	IOB	Controls the mechanical parts of the machine (excluding the scanner unit section), and the fusing lamp.	52
PCB4	SBU	Contains the CCD, and outputs a video signal to the SBICU board.	21
PCB5	Scanner Motor Drive	Drives the scanner motor.	51
PCB6	Lamp Regulator	Provides dc power to the exposure lamp.	22
PCB7	DC/DC Converter	Generates dc voltages.	19
PCB8	LDDR	Controls the laser diodes.	27

Symbol	Name	Function	Index No.
PCB9	Interface	Passes signals and dc supplies from the PSU and IOB to motors and other components.	64
PCB10	Paper Feed Control Board (PFB)	Controls the mechanical parts of all paper feed sections.	58
PCB11	Operation Panel 1	Controls the components on the right-hand side of the operation panel.	31
PCB12	Operation Panel 2	Controls the components on the left-hand side of the operation panel.	34
PCB13	LCD Control	Controls the LCD.	33
PCB14	By-pass Paper Size	Detects the paper width on the by-pass tray.	101
PCB15	Mother (Option)	Connects the printer control board.	54
PCB16	Printer Control (Option)	Receives print data from a PC.	55
Lamps			
L1	Exposure Lamps	Apply high intensity light to the original for exposure.	15
L2	Fusing Lamp 1	Provides heat to the hot roller.	86
L3	Fusing Lamp 2	Provides heat to the hot roller.	85
L4	Quenching	Neutralizes any charge remaining on the drum surface after cleaning.	89
Power Packs			
PP1	Charge	Provides high voltage for the charge corona wires and the grid plate.	87
PP2	Development	Provides high voltage for the development unit.	56
PP3	Transfer	Provides high voltage for the transfer belt.	93
Others			
TF1	Fusing Thermofuse	Opens the fusing lamp circuit if the fusing unit overheats.	84
TH1	Fusing Thermistor	Detects the temperature of the hot roller.	83
H1	Optics Anti-Condensation	Turns on when the main switch is off to prevent moisture from forming on the optics.	16
H2	Drum	Turns on when the main switch is off to prevent moisture from forming around the drum.	63
H3	Tray Heater 1	Turns on when the main switch is off to keep paper dry in the paper tray.	62
H4	Tray Heater 2	Turns on when the main switch is off to keep paper dry in the paper tray.	60

Symbol	Name	Function	Index No.
CB1	Circuit Breaker	Provides back-up high current protection for the electrical components.	61
HDD 1	HDD	Scanned image data is compressed and held here temporarily.	53
LCD 1	LCD	Displays the operation menus and messages.	32
LSD 1	Laser Synchronization Detector	Detects the laser beam at the start of the main scan.	26
TP1	Touch Panel	Monitors the key matrix.	(32)

1.7.2 ADF

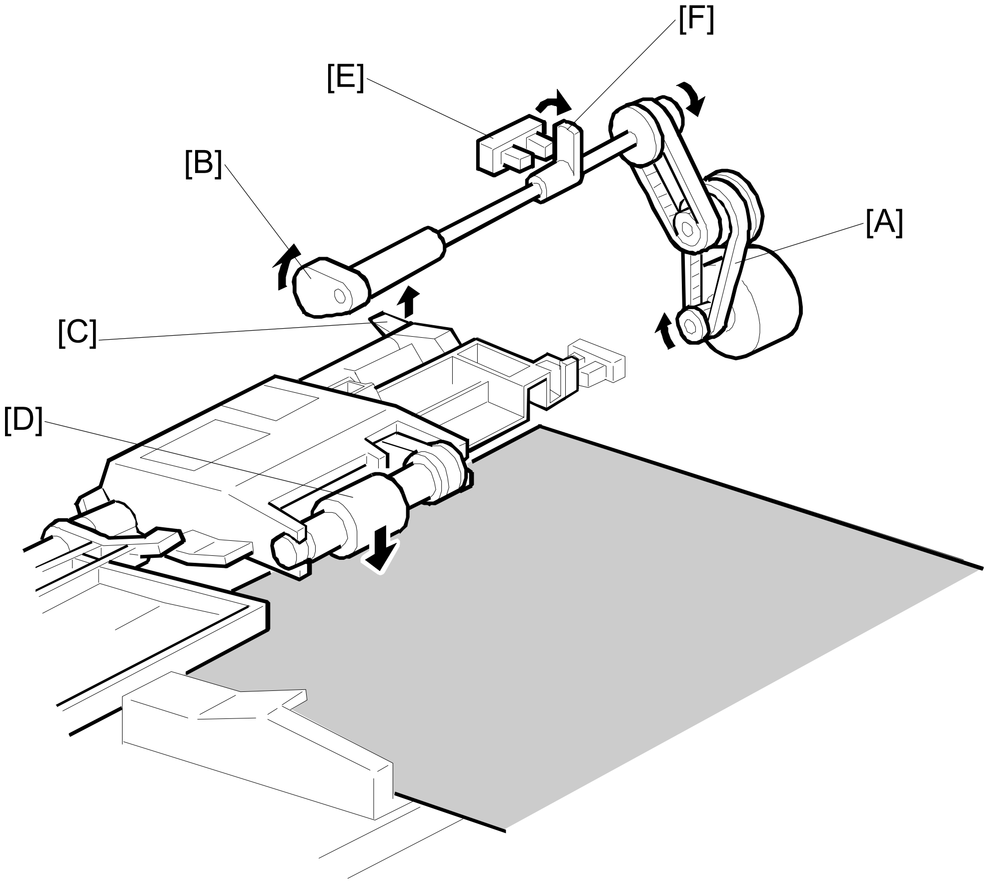
Symbol	Name	Function	Index No.
Motors			
M1	Pick-up	Moves the pick-up roller up and down.	2
M2	Feed-in	Drives the feed belt, and the separation, pick-up, and transport rollers.	6
M3	Transport	Drives the transport belt.	7
M4	Feed-out	Drives the exit and inverter rollers.	11
M5	Bottom plate	Moves the bottom plate up and down.	5
Sensors			
S1	APS Start	Informs the CPU when the DF is opened and closed (for platen mode) so that the original size sensors in the copier can check the original size.	9
S2	DF Position	Detects whether the DF is lifted or not.	10
S3	Original Set	Detects whether an original is on the table.	23
S4	Bottom Plate HP	Detects whether the bottom plate is in the down position or not.	17
S5	Bottom Plate Position	Detects when the original is at the correct position for feeding.	24
S6	Pick-up Roller HP	Detects whether the pick-up roller is up or not.	1
S7	Entrance	Detects when to restart the pick-up motor to lift up the pick-up roller, detects when to change the feed motor direction, detects the trailing edge of the original to finish checking the original length, and checks for misfeeds.	22
S8	Registration	Detects the leading edge of the original to check the original length, detects when to stop the original on the exposure glass, and checks for misfeeds.	18
S9	Original Width 1	Detects the original width.	21
S10	Original Width 2	Detects the original width.	20
S11	Original Width 3	Detects the original width.	19
S12	Exit	Detects when to stop the transport belt motor and checks for misfeeds.	15
S13	Inverter	Detects when to turn the inverter gate and exit gate solenoids off and checks for misfeeds.	14
S14	Feed Cover	Detects whether the feed cover is open or not.	3
S15	Exit Cover	Detects whether the exit cover is open or not.	12
Solenoids			
SOL1	Exit Gate	Opens and closes the exit gate.	13
SOL2	Inverter Gate	Opens and closes the inverter gate.	16

Symbol	Name	Function	Index No.
PCBs			
PCB1	DF Main	Controls the DF and communicates with the main copier boards.	8
PCB2	DF Indicator	Indicates whether an original has been placed in the feeder; and indicates whether SADF mode has been selected.	4

2. DETAILED DESCRIPTIONS

2.1 DOCUMENT FEEDER

2.1.1 PICK-UP ROLLER RELEASE MECHANISM



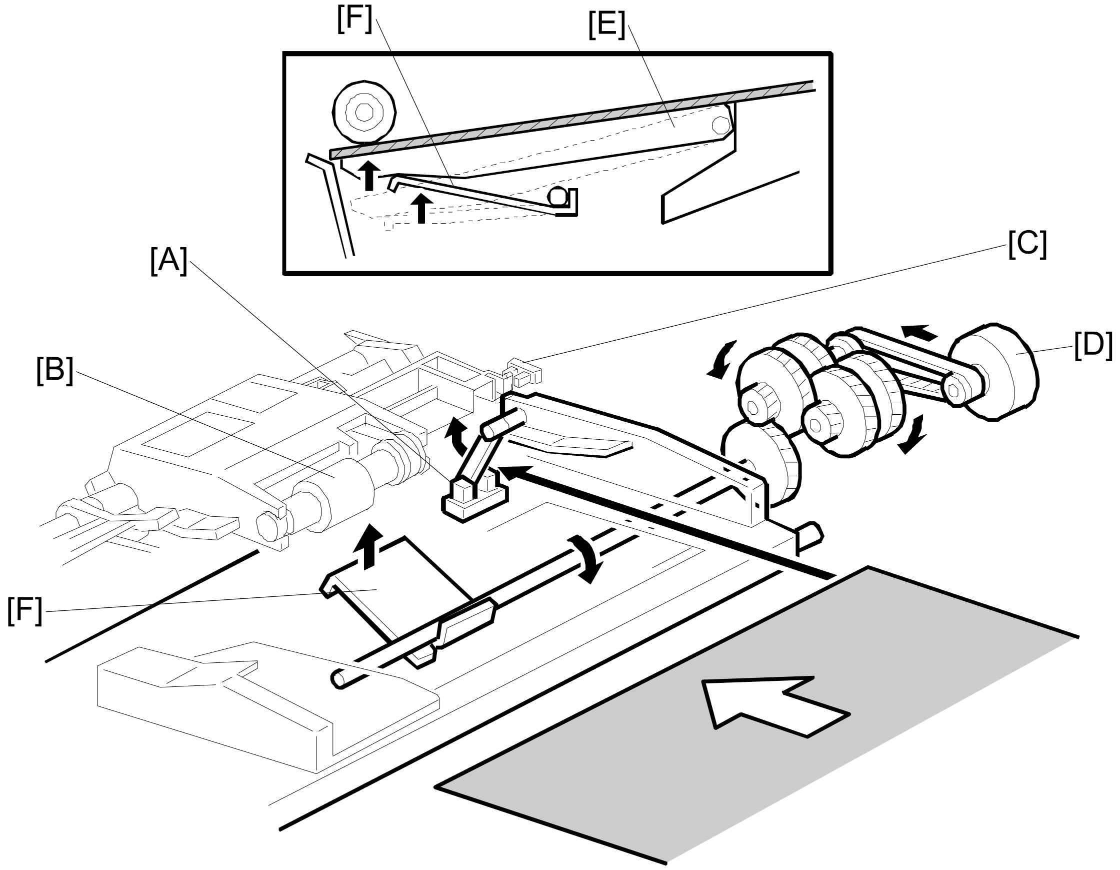
A229D651.WMF

When the original set sensor is off (no original on the original tray), the pick-up roller stays in the up position.

When the original set sensor turns on (or when the trailing edge of a page passes the entrance sensor while pages remain on the original tray), the pick-up motor [A] turns on. The cam [B] rotates away from the pick-up roller release lever [C]. The lever then rises and the pick-up roller [D] drops onto the original.

When the original reaches the entrance sensor, the pick-up motor turns on again. The cam pushes the lever down, and the pick-up roller rises until the pick-up roller HP sensor [E] detects the actuator [F].

2.1.2 BOTTOM PLATE LIFT MECHANISM

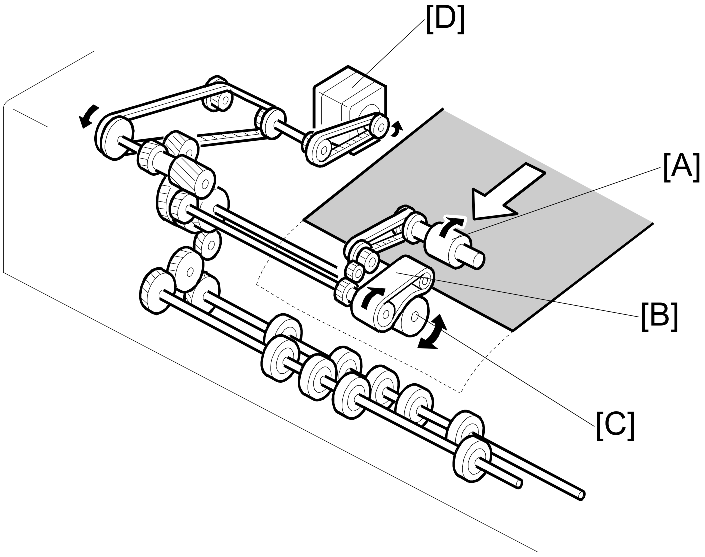


A229D652.WMF

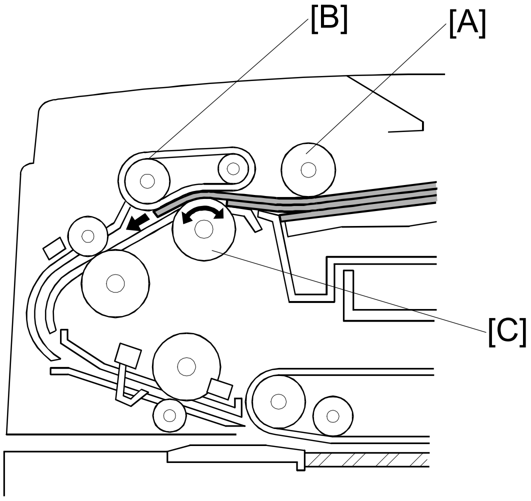
When an original is placed on the original tray, the original set sensor [A] turns on, the pick-up roller [B] drops on to the original, and the bottom plate position sensor [C] turns off. Then the bottom plate motor [D] turns on and lifts the bottom plate [E] by raising the lift lever [F] until the bottom plate position sensor turns on.

When the bottom plate position sensor turns off during original feed, the bottom plate motor turns on and lifts the bottom plate until the bottom plate position sensor turns on. This keeps the original at the correct height for feeding.

2.1.3 PICK-UP AND SEPARATION MECHANISM



A806D105.WMF



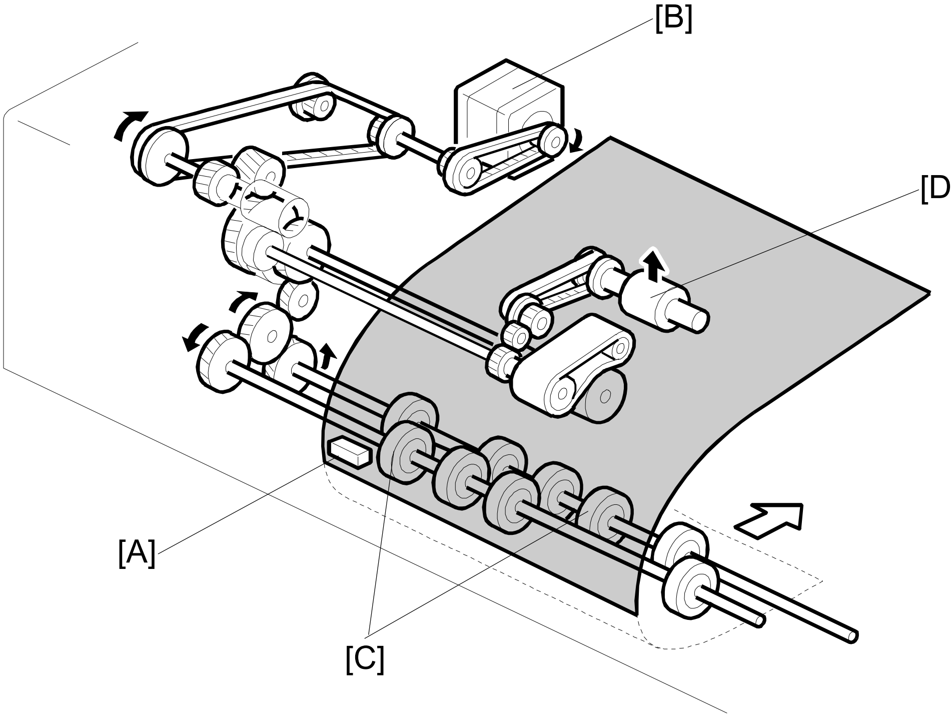
A806D106.WMF

The original separation system is an FRR system. The pick-up roller [A], feed belt [B], and separation roller [C] are driven by the feed-in motor [D].

To drive this mechanism, the feed-in motor turns in the forward direction.

When two sheets of the original are fed by the pick-up roller, the separation roller turns in the opposite direction to the feed belt and the 2nd sheet is pushed back to the original tray. When there is only one sheet between the feed belt and separation roller, the separation roller rotates in the same direction as the feed belt. This is because the separation roller contains a torque limiter.

2.1.4 ORIGINAL FEED MECHANISM

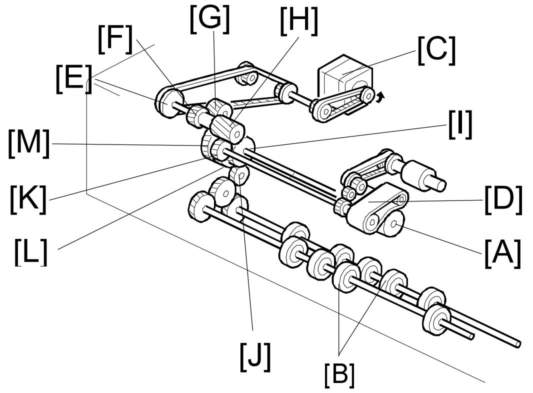


A806D107.WMF

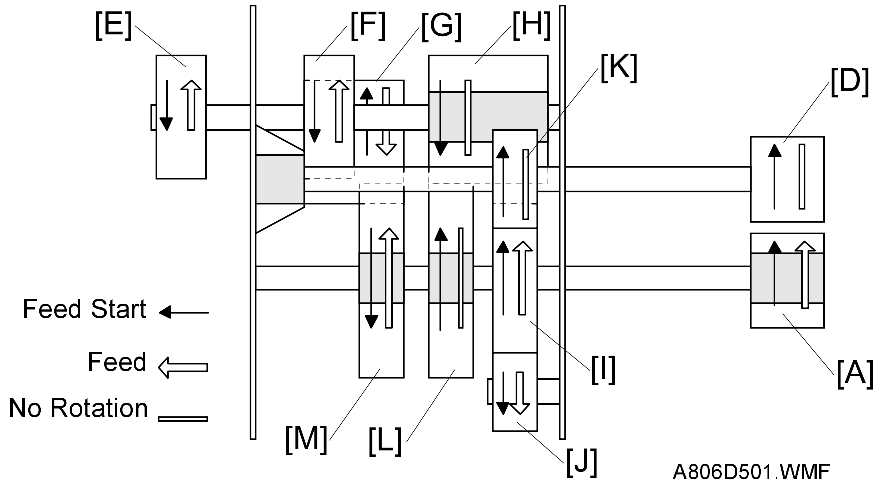
When the leading edge of the original turns the entrance sensor [A] on, the feed-in motor [B] changes direction, and turns in reverse. However, the transport rollers [C] keep turning in the same direction because of a combination of one-way clutches (see the next page).

At the same time, the pick-up motor starts again and the pick-up roller [D] is lifted up. When the pick-up roller HP sensor turns on, the pick-up motor stops (see Pick-up Roller Release Mechanism).

2.1.5 ORIGINAL FEED DRIVE MECHANISM



A806D500.WMF



A806D501.WMF

The separation roller [A] and transport rollers [B] always turn in the same direction because of a combination of gears and one-way clutches, even if the feed-in motor [C] changes direction. However, the feed belt [D] stops during original feed.
The gears H, L, and M each have a one-way clutch.

Original Feed Start

When the feed-in motor turns on, the drive is transferred as follows:

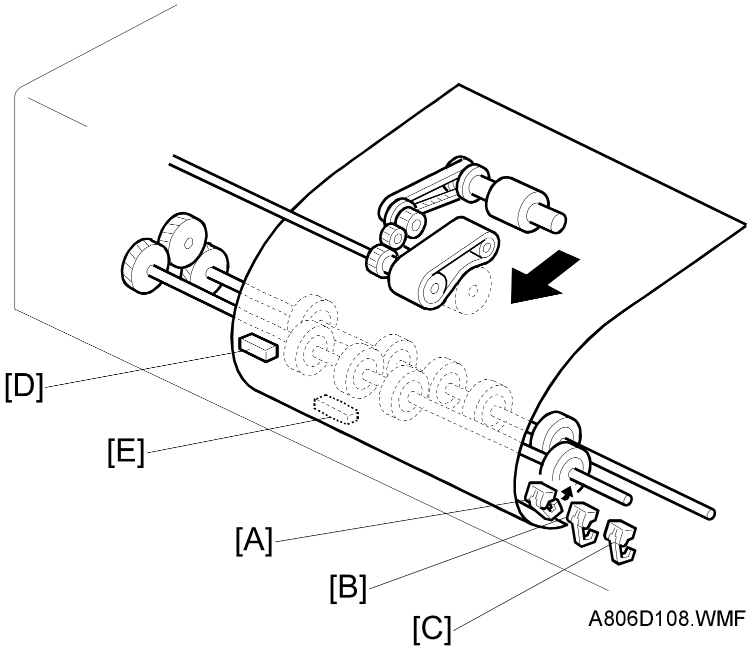
E → H → K → Feed Belt [D]
└→ L → Separation Roller [A]
└→ G → I → J → Transport Roller

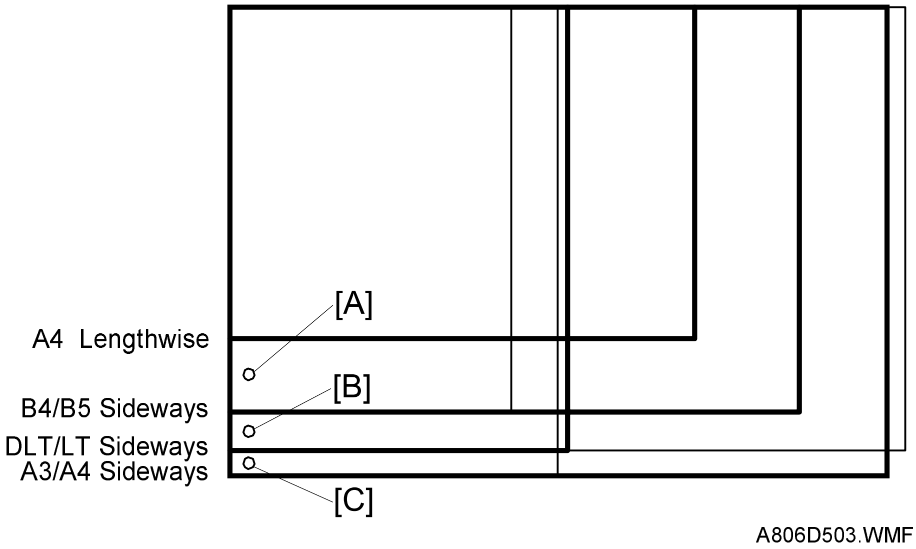
Original Feed

When the leading edge of the original turns on the entrance sensor, the feed-in motor turns in reverse, and the drive is transferred as follows:

E→F→G→M→Separation Roller
└→ I→ J→ Transport Roller

2.1.6 ORIGINAL SIZE DETECTION

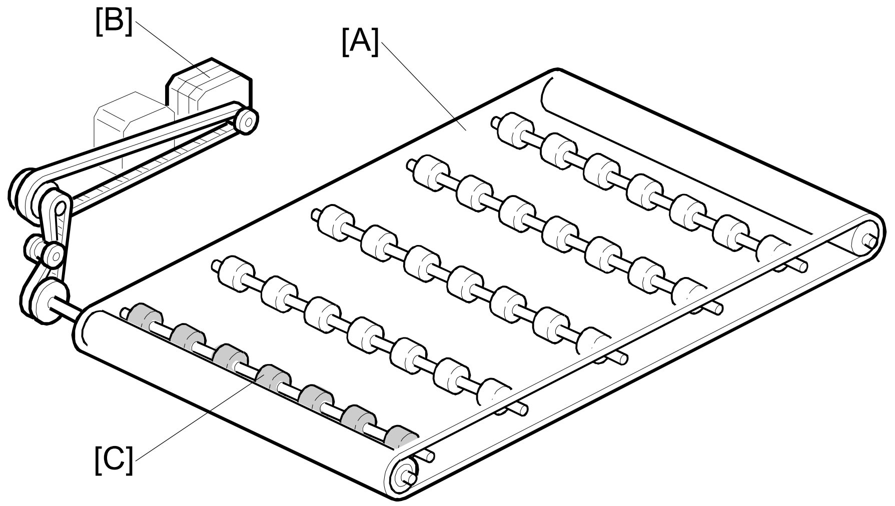

[D]
[E]
[A]
[B]
[C]
A806D108.WMF


[A]
A4 Lengthwise
[B]
B4/B5 Sideways
DLT/LT Sideways
A3/A4 Sideways
[C]
A806D503.WMF

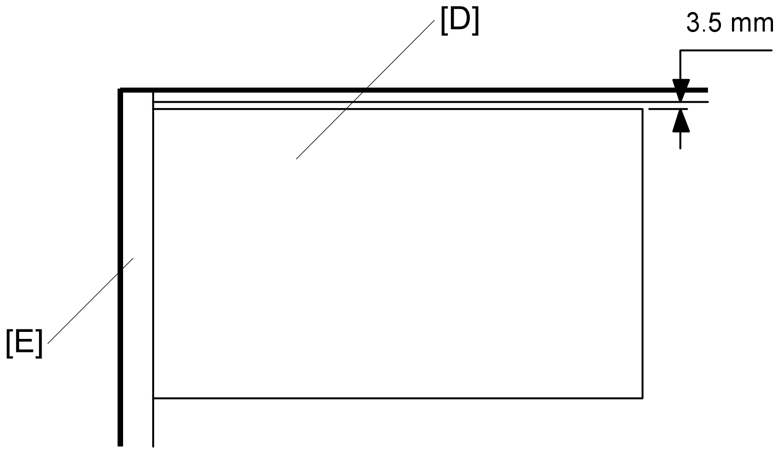
The DF detects original width using three original width sensors-1 [A], -2 [B], -3 [C], and detects original length using entrance sensor [D] and registration sensor [E]. The CPU counts the feed-in motor pulses between when the leading edge of the original turns on the registration sensor and when the trailing edge of the original turns off the entrance sensor.

The machine detects the original size from the combination of readings from all sensors.

2.1.7 ORIGINAL TRANSPORT MECHANISM



A806D109.WMF



A806D509.WMF

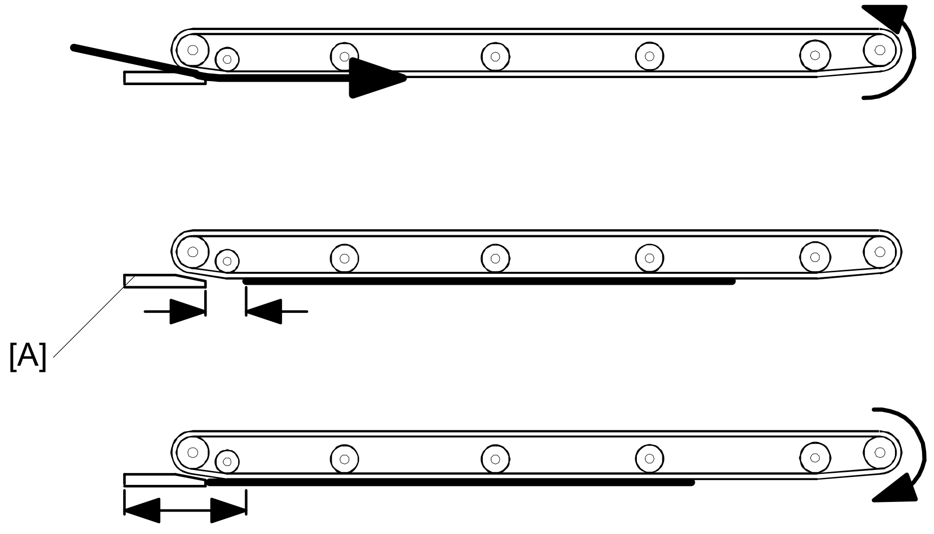
The transport belt [A] is driven by the transport belt motor [B]. The transport belt motor starts when the copier sends an original feed-in signal.

Inside the transport belt are five pressure rollers which give the proper pressure between the belt and original. The pressure roller [C] closest to the left original scale is made of rubber for the stronger pressure needed for thick originals. The other rollers are sponge rollers.

Since the copier's original position is at the left rear corner, the original [D] fed from the DF must also be at this position. But if the original was to be fed along the rear scale [E], original skew, jam, or wrinkling may occur.

To prevent such problems, the original transfer position is set to 3.5 mm away from the rear scale as shown. The 3.5 mm gap is compensated for by changing the starting position of the main scan.

2.1.8 ORIGINAL SKEW CORRECTION MECHANISM



A680D510.WMF

The transport belt motor remains energized to carry the original approximately 7 mm past the left scale [A] (see the middle drawing). Then the motor stops and reverses to feed the original back against the left scale (see the bottom drawing). This forces the original to hit the left scale and this aligns the trailing edge to minimize the original skew on the exposure glass.

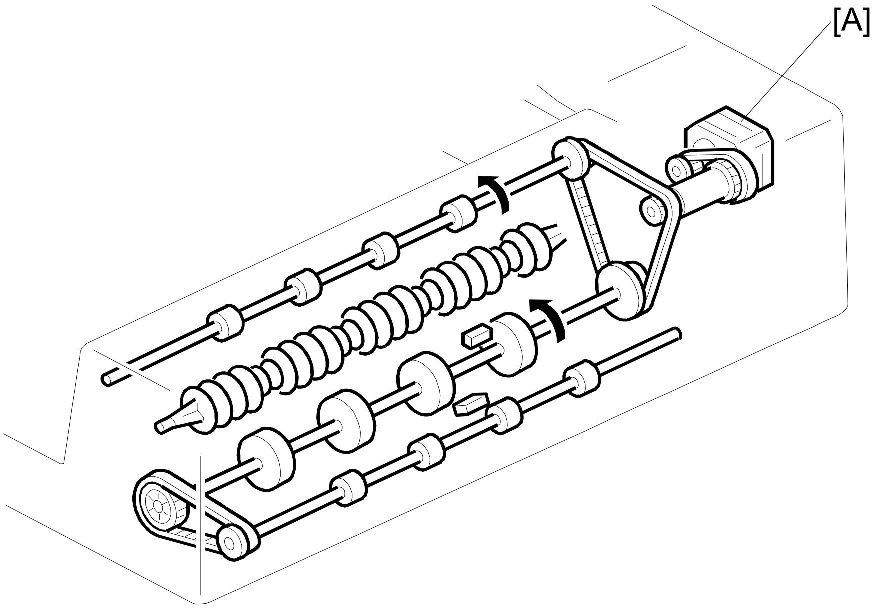
If thin original mode is selected, the original is not forced back against the left scale. This is to prevent any damage to the original.

After a two-sided original has been inverted to copy the 2nd side, it is fed in from the inverter against the left scale (see the bottom drawing; the top two drawings do not apply in this mode).

The amount of reverse feed against the left scale can be adjusted with SP modes.

2.1.9 ORIGINAL INVERSION AND FEED-OUT MECHANISM

General Operation



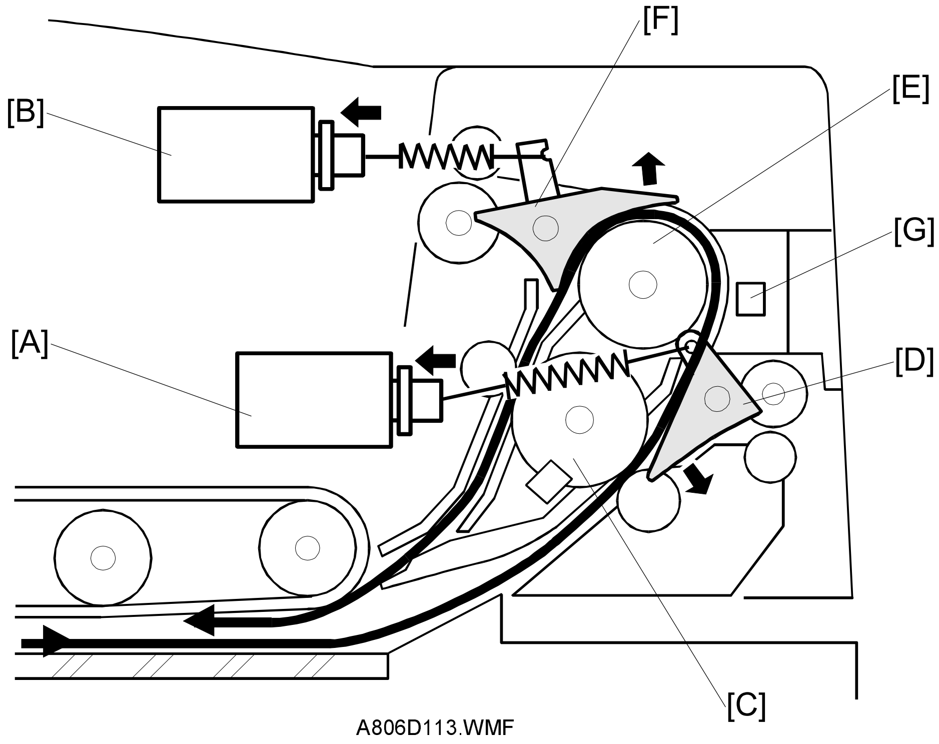
A806D110.WMF

When the scanner reaches the return position, the copier’s CPU sends the feed-out signal to the DF. When the DF receives the feed-out signal, the transport belt motor and feed-out motor [A] turn on. The original is then fed out to the exit tray or fed back to the exposure glass after reversing in the inverter section.

This DF has two exit trays. For single-sided original mode, the original is fed out to the right exit tray and for double-sided original mode, the original is fed out to the upper exit tray.

This causes the originals to be fed out in the correct order on the exit trays and allow the best one-to-one copy speed for each mode. The user can change the exit tray to the upper exit tray for single-sided mode (for example, if there is not enough space in the room for the right exit tray to be installed). However, one-to-one copy speed for this mode is reduced.

Original Inversion Mechanism

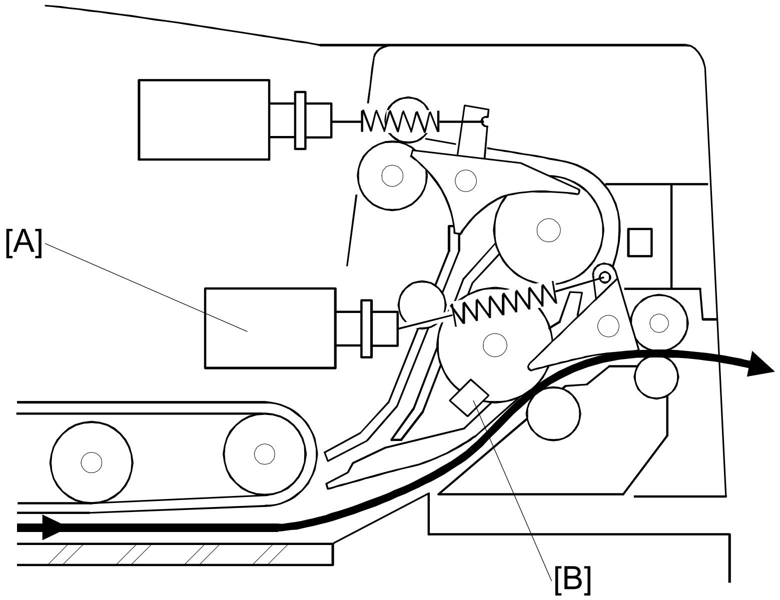


A806D113.WMF

When the DF receives the original invert signal from the copier, the transport belt motor, feed-out motor, exit gate solenoid [A], and inverter gate solenoid [B] turn on and the original is fed back to the exposure glass through the inverter roller [C], exit gate [D], inverter guide roller [E], inverter gate [F], and inverter roller.

The transport belt motor turns in reverse shortly after the leading edge of the original turns on the inverter sensor [G], and feeds the original to the left scale.

Original Exit Mechanism (Single-Sided Original Mode)

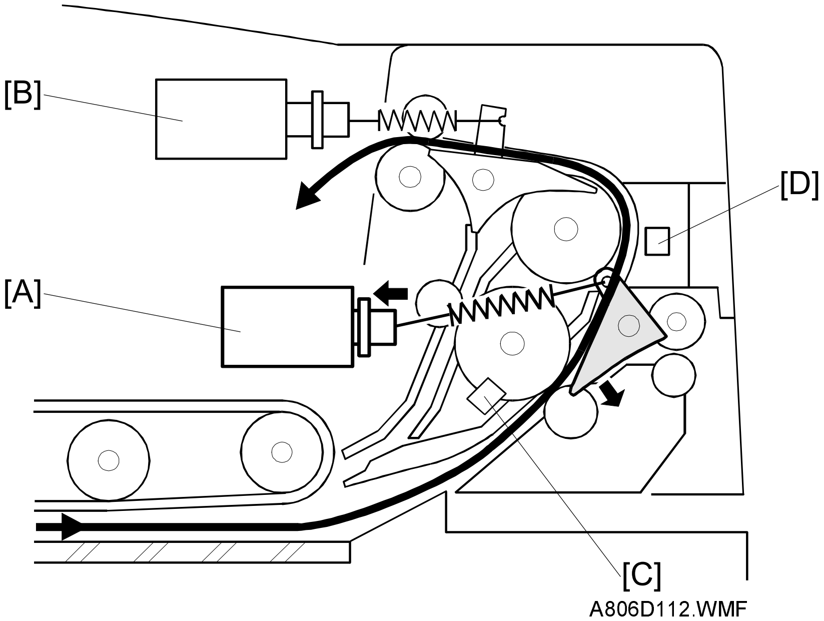


A806D111.WMF

The exit gate solenoid [A] remains off and the original is fed out to the right exit tray. The transport belt motor turns off after the exit sensor [B] turns off.

To stack the originals neatly on the exit tray, the feed-out motor speed is reduced approximately 30 mm before the trailing edge of the original turns off the exit sensor.

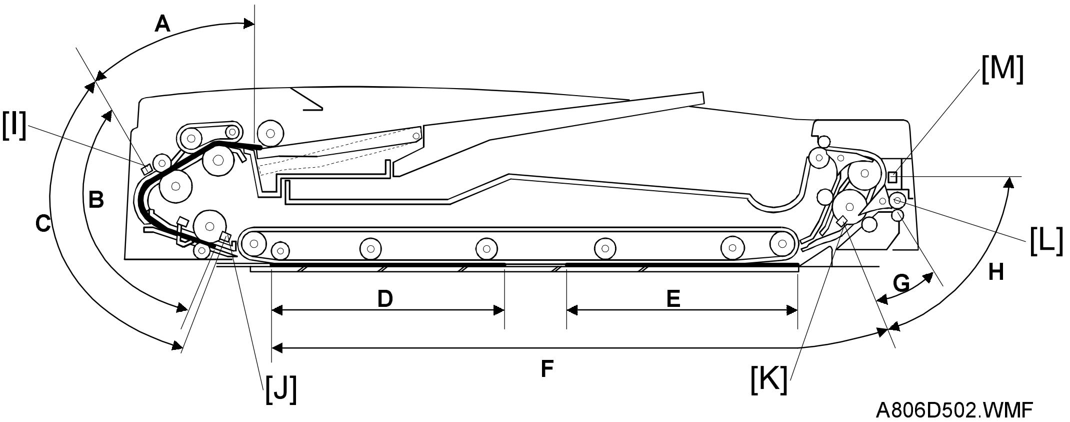
Original Exit Mechanism (Double-Sided Original Mode)



The exit gate solenoid [A] turns on and the inverter gate solenoid [B] remains off, and the original is fed out to the upper tray. The transport belt motor turns off when the trailing edge of the original passes through the exit sensor [C].

To stack the originals neatly on the upper tray, the feed-out motor speed is reduced shortly after the trailing edge of the original turns off the inverter sensor [D].

2.1.10 JAM CONDITIONS



A806D502.WMF

1. The entrance sensor [I] has still not turned on when the feed-in motor has fed the original twice the length [A] (between the original set position and the entrance sensor).
2. The registration sensor [J] has still not turned on when the feed-in motor has fed the original the length [B] (between the pre-feed position and the entrance sensor).
3. The entrance sensor has still not turned off when the feed-in motor has fed the original 1062 mm.
4. The registration sensor has still not turned off when the feed-in motor has fed the original twice the length [C] (between the entrance sensor and the registration sensor).
5. The exit sensor [K] has still not turned on when the transport and feed-out motors have fed the original the distance [N].

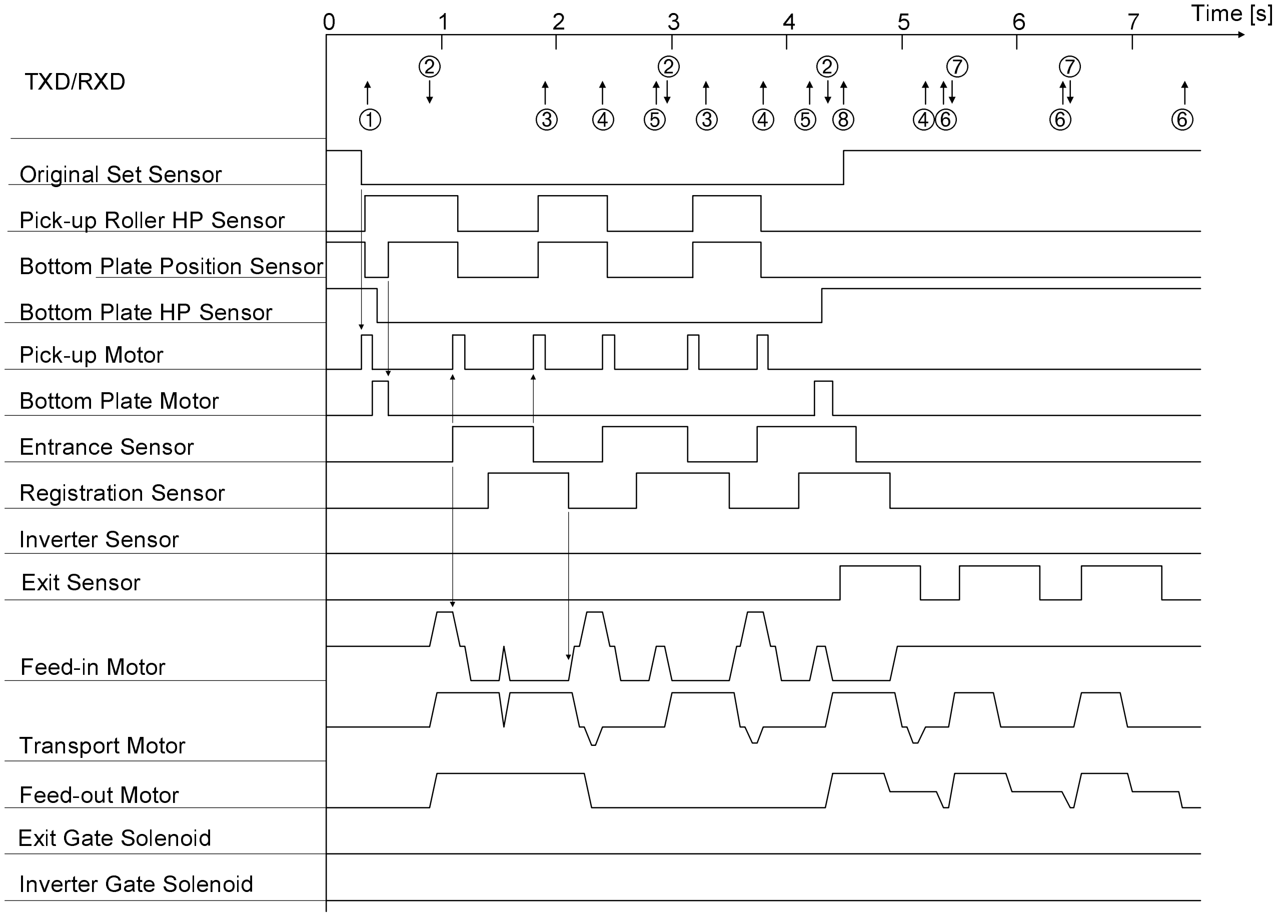
   N = F + 600 mm – (D + E)

   F: Length between the original scale and the exit sensor

   D+E : Total length of the originals on the exposure glass (e.g., for two A4 sideways pages. If there is only one page on the glass, E is zero)
6. The exit sensor has still not turned off when feed-out motor has fed the original the length [G] (between the exit roller [L] and the exit sensor) + 65 mm after reducing the feed-out speed.
7. The inverter sensor [M] is still not on when the feed-out motor has fed the original twice the length [H] (between the exit sensor and the inverter sensor).
8. The exit sensor has still not turned off when the feed-out motor has fed the original the length of the original after the inverter sensor [M] turned on.
9. The inverter sensor has still not turned off when the feed-out motor has fed the original twice the length [H] (between the exit sensor and the inverter sensor) after the exit sensor turned off.

2.1.11 TIMING CHARTS

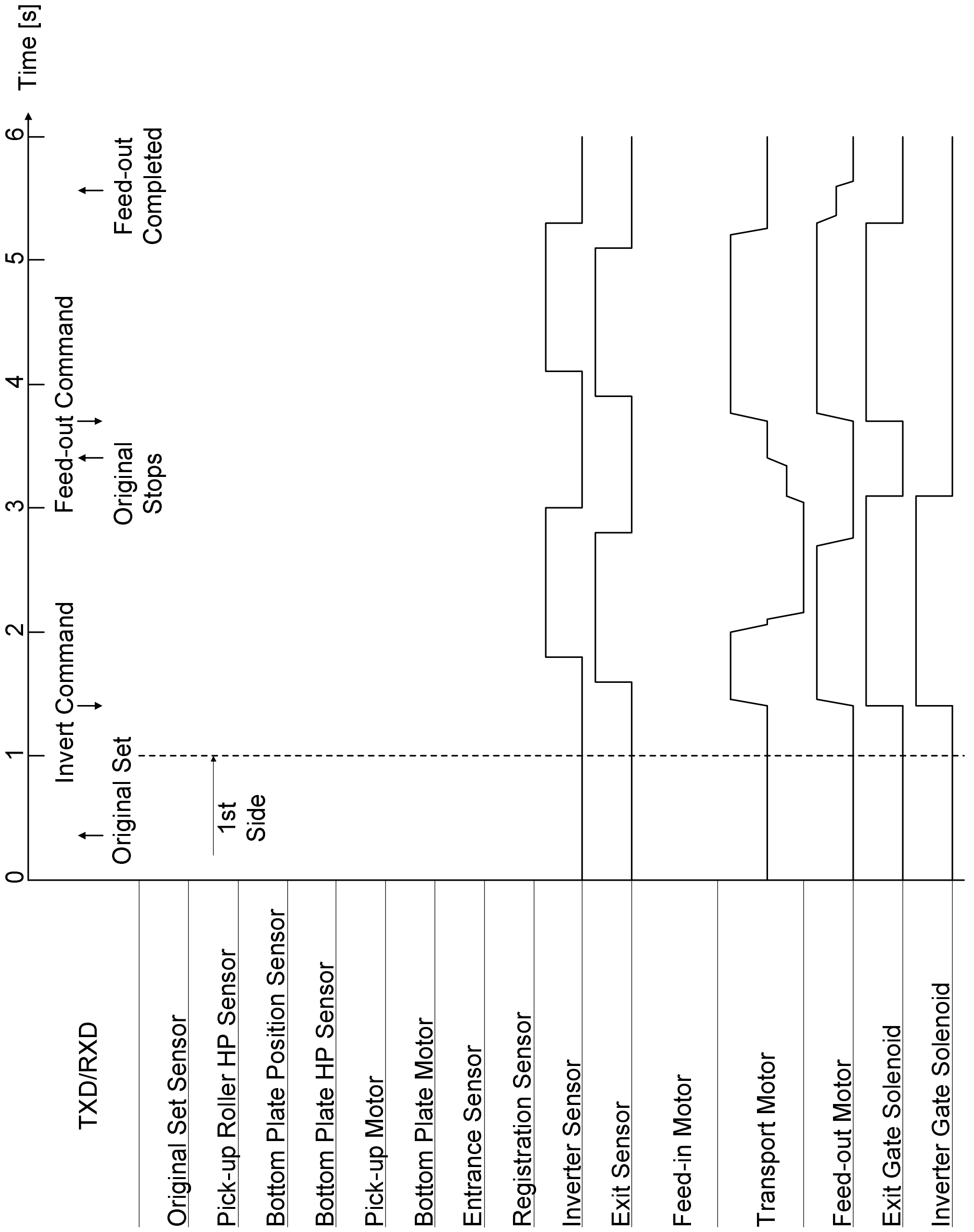
A4 Sideways: One-Sided Original (Three Pages)



①: Original is set
②: Feed in/out command
③: Original size detected
④: Original stops
⑤: Pre-feed completed
⑥: Feed-out completed
⑦: Feed-out command
⑧: No originals remain

A806D504.WMF

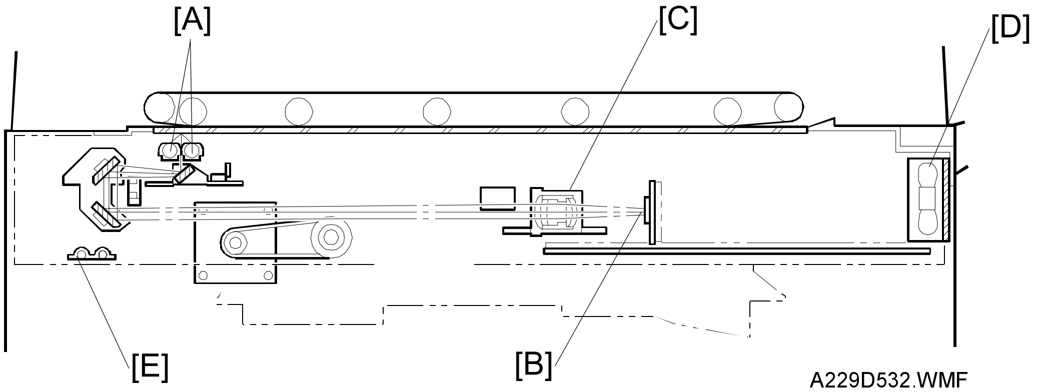
A3: Two-Sided Original (One Page)



A806D505.WMF

2.2 SCANNING

2.2.1 OVERVIEW



The original is illuminated by the two exposure lamps (xenon lamps in this model) [A]. The image is reflected onto a CCD (charge coupled device) [B] via the 1st, 2nd, and 3rd mirrors, and through the lens [C].

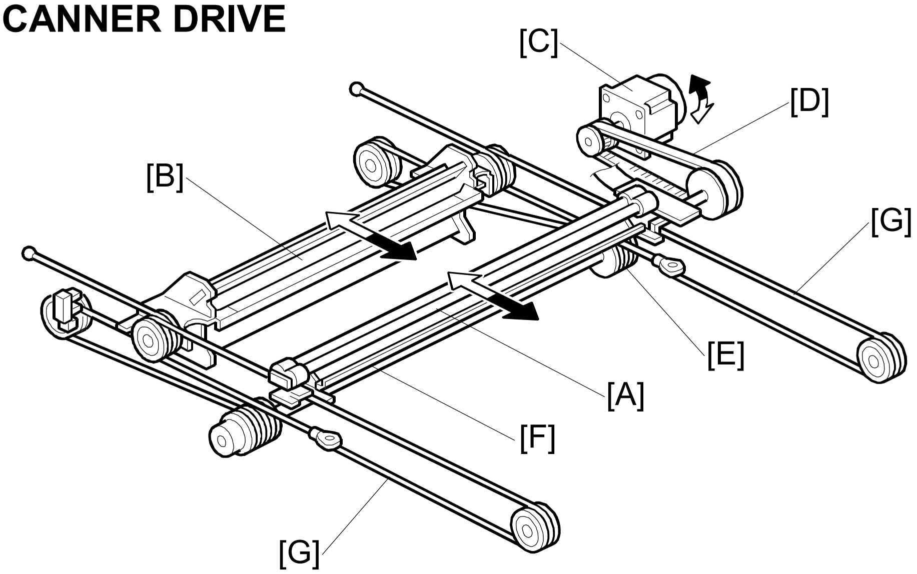
The 1st scanner consists of the two exposure lamps and the 1st mirror.

The exposure lamp is energized by a dc supply (24 V) to avoid uneven light intensity while the 1st scanner moves in the sub scan direction (down the page). The entire exposure lamp surface is frosted to ensure even exposure in the main scan direction (across the page).

There is an optics cooling fan [D] on the right side of the optics cavity to draw cool air inside. The hot air exits through the vents in the upper cover. The fan operates whenever the operation switch is turned on.

The optics anti-condensation heater [E] (a standard component for this machine, located on the optics base plate) turns on while the main switch is off, to prevent moisture from forming on the optics.

2.2.2 SCANNER DRIVE



A229D533.WMF

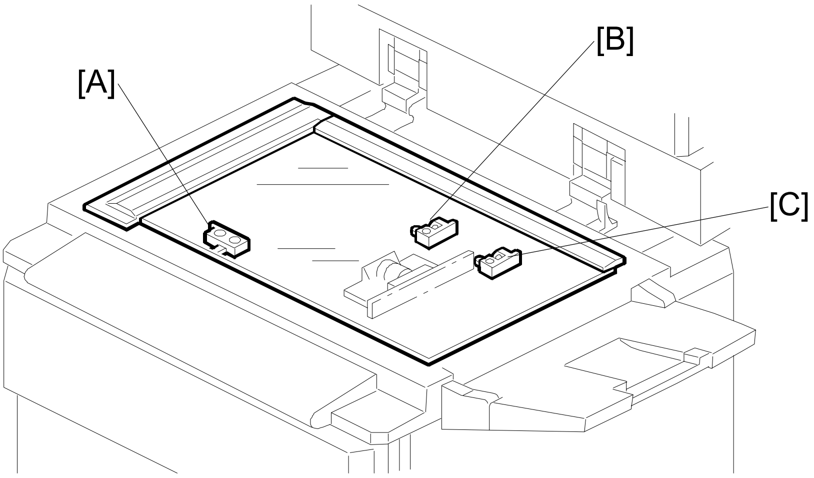
The scanner drive motor is a stepper motor. The 1st and 2nd scanners [A, B] are driven by the scanner drive motor [C] through the timing belt [D], scanner drive pulley [E], scanner drive shaft [F], and two scanner wires [G].

The scanner motor drive board controls the scanner drive motor. In full size mode, the 1st scanner speed is 330 mm/s during scanning. The 2nd scanner speed is half that of the 1st scanner.

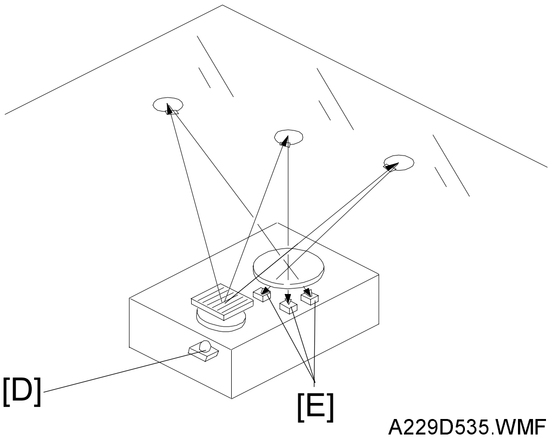
In reduction or enlargement mode, the scanning speed depends on the magnification ratio. The returning speed is always the same, whether in full size or magnification mode. The image length is changed in the sub scan direction by changing the scanner drive motor speed, and in the main scan direction it is changed by image processing on the SBICU board.

Magnification in the sub-scan direction can be adjusted by changing the scanner drive motor speed using SP4008.

2.2.3 ORIGINAL SIZE DETECTION IN BOOK MODE



A229D534.WMF



A229D535.WMF

There are three reflective sensors in the optics cavity for original size detection. The original width sensor [A] detects the original width, and the original length sensor-1 [B] and original length sensor-2 [C] detect the original length. These are the APS (Auto Paper Select) sensors.

Inside each APS sensor, there is an LED [D] and either three photoelectric devices [E] (for the width sensor) or one photoelectric device (for each length sensor). In the width sensor, the light generated by the LED is broken up into three beams and each beam scans a different point of the exposure glass (in each length sensor, there is only one beam). If the original or DF cover is present over the scanning point, the beam is reflected and each reflected beam exposes a photoelectric device and activates it.

While the main switch is on, these sensors are active and the original size data is always sent to the main CPU. However, the main CPU checks the data only when the DF is being closed (see the next page).

Original Size		**Length Sensor**		**Width Sensor**			**SP4301 Display**
A4/A3 Version	**LT/DLT Version**	**2**	**1**	**3**	**4**	**5**	
A3	11" x 17"	O	O	O	O	O	00011111
B4	10" x 14"	O	O	O	O	X	00011110
F4	81/2" x 14" (8" x 13")	O	O	O	X	X	00011100
A4-L	81/2" x 11"	X	O	O	X	X	00001100
B5-L	–	X	O	X	X	X	00001000
A5-L	51/2" x 81/2"	X	X	X	X	X	00000000
A4-S	11" x 81/2"	X	X	O	O	O	00000111
B5-S	–	X	X	O	O	X	00000110
A5-S	81/2" x 51/2"	X	X	O	X	X	00000100

-L: Lengthwise, -S: Sideways, O: High (Paper Present), X: Low

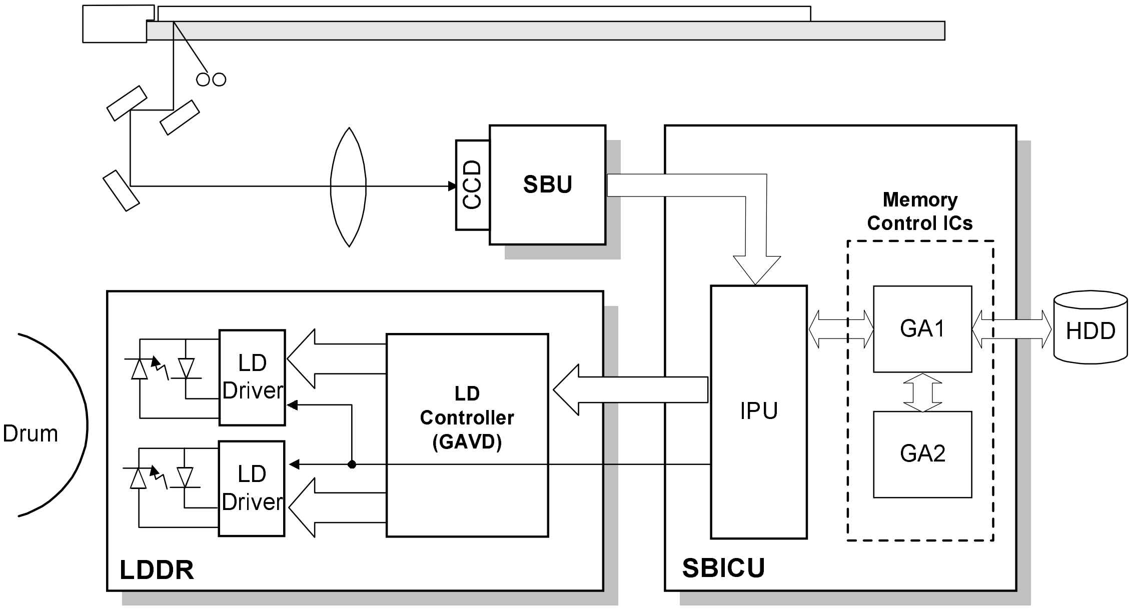
The original size data is taken by the main CPU when the DF position sensor [A] is activated. This is when the DF is positioned about 15 cm above the exposure glass. At this time, only the sensor(s) located underneath the original receive the reflected light and switch on. The other sensor(s) are off. The main CPU can recognize the original size from the on/off signals from the five sensors.

If the copy is made with the platen open, the main CPU decides the original size from the sensor outputs when the Start key is pressed.

The above table shows the outputs of the sensors for each original size. This original size detection method eliminates the necessity for a pre-scan and increases the machine's productivity. However, if the by-pass feeder is used, note that the machine assumes that the copy paper is lengthwise. For example, if A4 sideways paper is placed on the by-pass tray, the machine thinks it is A3 paper and scans the full A3 area, disregarding the original size sensors. However, for each page, the data signal to the laser diode is stopped to match the copy paper length detected by the registration sensor. This means that copy time for the first page may be slower (because of the longer time required for scanning), but it will be normal for the rest of the job.

2.3 IMAGE PROCESSING

2.3.1 OVERVIEW


CCD
SBU
Memory Control ICs
GA1
GA2
HDD
IPU
LD Driver
LD Driver
LD Controller (GAVD)
Drum
LDDR
SBICU

A229D578.WMF

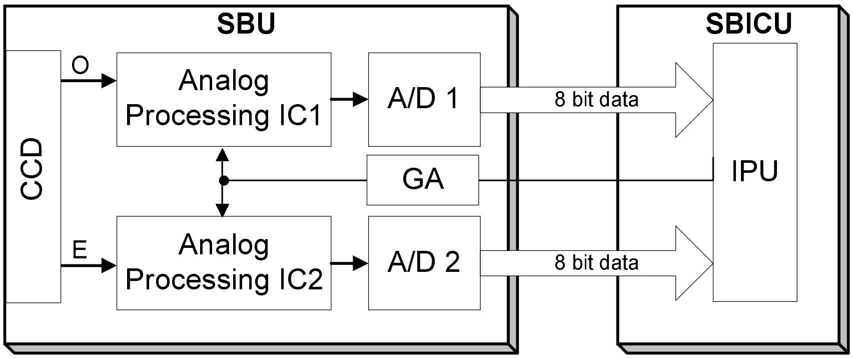
The CCD generates an analog video signal. The SBU (Sensor Board Unit) converts the analog signal to an 8-bit digital signal, then it sends the digital signal to the SBICU (Scanner, Base-engine, and Image Processing Control Unit) board.

The SBICU board can be divided into two image processing blocks; the IPU (Image Processing Unit) and the memory control IC. These two ICs mainly do the following:

- **IPU:** Auto shading, filtering, magnification, γ correction, gradation processing, and video path control
- **Memory Controller:** Image compression, image rotation, interface with HDD controller, image repeat, and combine originals

Finally, the SBICU board sends the video data to the LD drive board.

2.3.2 SBU



A229D579.WMF

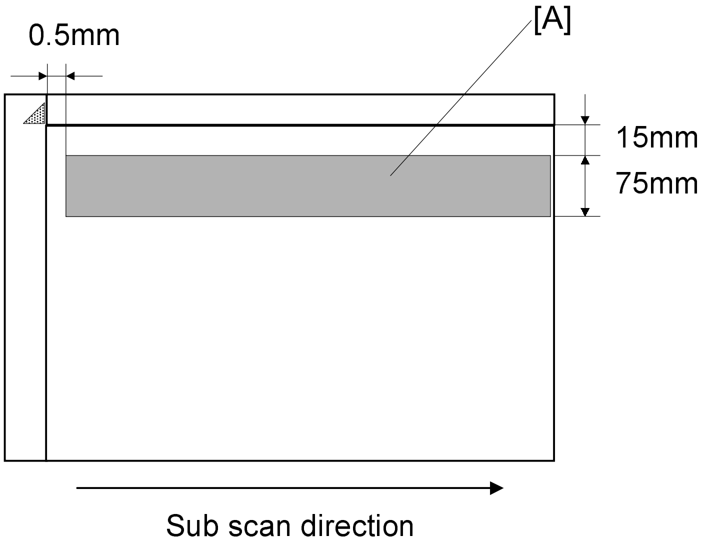
The CCD converts the light reflected from the original into an analog signal. The CCD line has 5,000 pixels and the resolution is 400 dpi (15.7 lines/mm).

The CCD has two output lines, for odd and even pixels, to the analog processing IC. There are two analog processing ICs; one handles odd pixels and the other handles even pixels. The analog processing IC performs the following operations on the signals from the CCD.

1. Z/C (Zero Clamp):
   Adjusts the black level reference for even pixels to match the odd pixels.
2. Signal Amplification
   The analog signal is amplified by operational amplifiers in the AGC circuit. The maximum gains of the operational amplifiers are controlled by the CPU on the SBICU board.

After the above processes, the analog signals are converted to 8-bit signals by the A/D converter. This gives a value for each pixel on a scale of 256 grades. Then, this data goes to the SBICU board. Two 8-bit signals are sent to the SBICU board.

2.3.3 AUTO IMAGE DENSITY (ADS)



A229D581.WMF

This mode prevents the background of an original from appearing on copies.

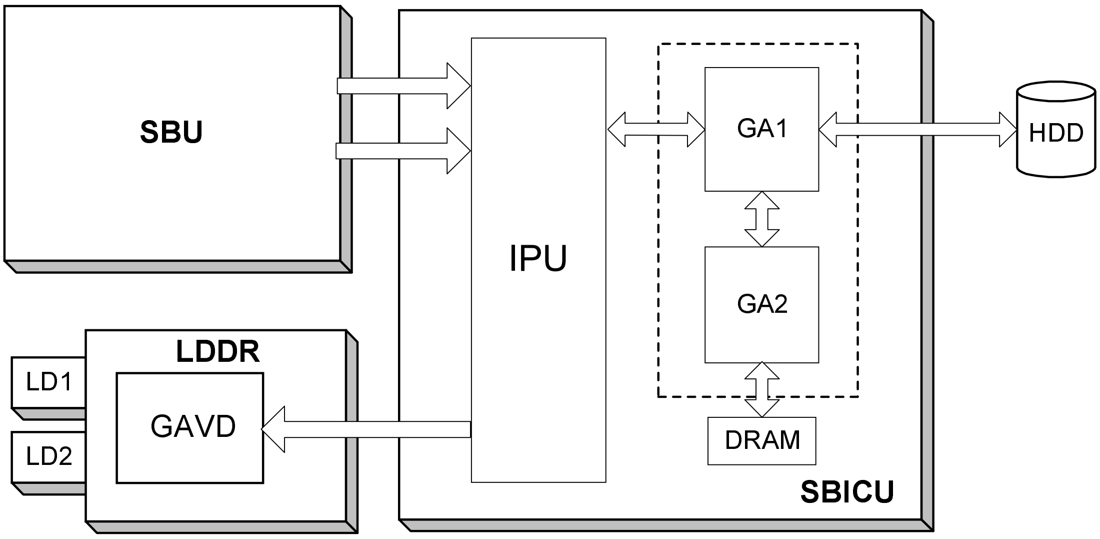
The copier scans the auto image density detection area [A]. This corresponds to a narrow strip at one end of the main scan line, as shown in the diagram. As the scanner scans down the page, the IPU on the SBICU detects the peak white level for each scan line, within this narrow strip only. From this peak white level, the IPU determines the reference value for A/D conversion for the scan line. Then, the IPU sends the reference value to the A/D controller on the SBU.

When an original with a gray background is scanned, the density of the gray area is the peak white level density. Therefore, the original background will not appear on copies. Because peak level data is taken for each scan line, ADS corrects for any changes in background density down the page.

As with previous digital copiers, the user can select manual image density when selecting auto image density mode and the machine will use both settings when processing the original.

2.3.4 IPU (IMAGE PROCESSING UNIT)

Overview



A229D580.WMF

The image data from the SBU goes to the IPU (Image Processing Unit) IC on the SBICU board, which carries out the following processes on the image data.

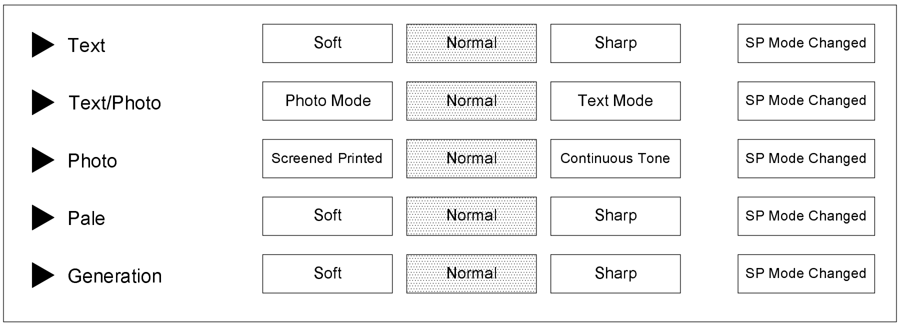
1. Auto shading
2. Text/Photo separation
3. Background/Independent dot erase
4. Filtering (MTF and smoothing)
5. Magnification
6. γ correction
7. Grayscale processing
8. Error diffusion
9. Dithering
10. Video path control
11. Test pattern generation

2.3.5 IMAGE PROCESSING STEPS AND RELATED SP MODES

The following tables shows the image processing path and the related SP modes used for each image processing mode.

The user can adjust many of the image processing parameters with a UP mode (Copy Features – General Features – Original Mode Quality Level), using fixed settings such as Sharp, Normal, and Soft. Each of these fixed settings has different parameter settings. The user's changes do not affect the SP mode settings.

If the user is not satisfied with any of the available settings for this UP mode, the technician can adjust the SP modes. However, the SP mode settings are not used unless the user selects 'SP Mode Changed' with the UP Mode.



▶ Text	Soft	Normal	Sharp	SP Mode Changed
▶ Text/Photo	Photo Mode	Normal	Text Mode	SP Mode Changed
▶ Photo	Screened Printed	Normal	Continuous Tone	SP Mode Changed
▶ Pale	Soft	Normal	Sharp	SP Mode Changed
▶ Generation	Soft	Normal	Sharp	SP Mode Changed

A229D650.WMF

For more details about the settings available for the user, see Service Tables – Image Quality Setting by UP Mode.

Text Mode

In text mode, there is no text/image separation, and the entire image is processed as a text area. The MTF filtering coefficient and strength can be adjusted individually for both main and sub scan. Low density originals are produced better when a stronger MTF filter is selected, but in this case, moiré tends to appear.

With UP Mode (Copy Features – General Features – Original Mode Quality Level), the user can select 'Soft', 'Normal', 'Sharp', and 'SP Mode Changed'. The settings of the SP modes indicated with an asterisk (*) are not used unless the user selects 'SP Mode Changed'.

	Image Processing Steps	Related SP Modes
Input Correction 1	Auto Shading ↓	
Input Correction 2	Background Erase ↓	SP4903-033 * (Background Erase Level)
	Independent Dot Erase ↓	SP4903-028 (Independent Dot Erase Level)
Filtering	MTF ↓	SP4903-011 to 014 * (MTF Filter Coefficient – Main Scan) SP4903-020 to 023 * (MTF Filter Strength – Main Scan) SP4903-041 to 044 * (MTF Filter Coefficient – Sub Scan) SP4903-050 to 053 * (MTF Filter Strength – Sub Scan)
Magnification	Main Scan Magnification ↓	SP2909-001 (Main Scan Magnification)
ID Control	γ Correction ↓	
Gradation	Grayscale Processing	

Photo Mode

There is no text/image separation, and the entire image is processed as a photo area.

With UP Mode (Copy Features – General Features – Original Mode Quality Level), the user can select ‘Screen Printed’, ‘Normal’, ‘Continuous Tone’, and ‘SP Mode Changed’. The settings of the SP modes indicated with an asterisk (*) are not used unless the user selects ‘SP Mode Changed’.

When the user selects “Normal Paper” and “Continuous Tone”, error diffusion is used for the gradation process. However, if the user selects “Screen Printed”, dither processing is used.

	Image Processing Path	**Related SP Modes**
Input Correction 1	Auto Shading	
Input Correction 2		
Filtering	Smoothing/MTF	SP4904-003 * (Filter Type Selection in Photo Mode) SP4903-016 * (Smoothing Filter Coefficient Level in Photo Mode) SP4903-015 * (MTF Filter Coefficient – Photo Mode)
Magnification	Main Scan Magnification	SP2909-001 (Main Scan Magnification)
ID Control	γ Correction	
Gradation	Error Diffusion/ Dither Matrix	SP4904-024 * (Grayscale Process Selection: Dither or Error Diffusion) SP4904-002 * (Dither Matrix Size Selection)

Text/Photo Mode

When text/photo mode is selected, text/photo separation is done. A text filter or photo filter is applied to each image area. The gradation process also depends on whether the image area is text or photo.

With UP Mode (Copy Features – General Features – Original Mode Quality Level), the user can select 'Photo Mode', 'Normal', 'Text Mode', and 'SP Mode Changed'. The settings of the SP modes indicated with an asterisk (*) are not used unless the user selects 'SP Mode Changed'.

	Image Processing Path	**Related SP Modes**
Input Correction 1	Auto Shading	
Input Correction 2	Text/Photo Separation	SP4912-001 to 005 * Edge Detection Parameters SP4912-017 (Text/Photo Separation Level) SP4908 * Text/Photo Separation Method
	Background Erase	SP4903-034 * (Background Erase Level) SP4906 * (Background Erase On/Off)
	Independent Dot Erase	SP4903-030 (Independent Dot Erase Level)
Filtering	MTF/Smoothing	SP4903-017 * (MTF Filter Coefficient-Text Areas) SP4903-047 * (Filter Type: MTF or Smoothing - Photo Areas)
Magnification	Main Scan Magnification	SP2909-001 (Main Scan Magnification)
ID Control	γ Correction	
Gradation	Error Diffusion and Text/Photo Separation	SP4907 * (Text/Photo Auto Separation) SP4904-007 * (Gradation Process in Text Areas) SP4904-008 * (Gradation Process in Photo Areas)

Pale Mode

The image processing for pale mode is basically the same as in text mode. However, the contrast of the original is low. So, to preserve details, a stronger MTF filter is used. Also, the independent dot erase level is set at a lower level, so that only the faintest of dots are deleted; this ensures that dotted lines and periods are not deleted.

With UP Mode (Copy Features – General Features – Original Mode Quality Level), the user can select ‘Soft’, ‘Normal’, ‘Sharp’, and ‘SP Mode Changed’. The settings of the SP modes indicated with an asterisk (*) are not used unless the user selects ‘SP Mode Changed’.

	Image Processing Path	**Related SP Modes**
Input Correction 1	Auto Shading	
Input Correction 2	Independent Dot Erase	SP4903-031 (Independent Dot Erase Level)
Filtering	MTF	SP4903-018 * (MTF Filter Coefficient – Pale Originals)
Magnification	Main Scan Magnification	SP2909-001 (Main Scan Magnification)
ID Control	γ Correction	
Gradation	Grayscale Processing	

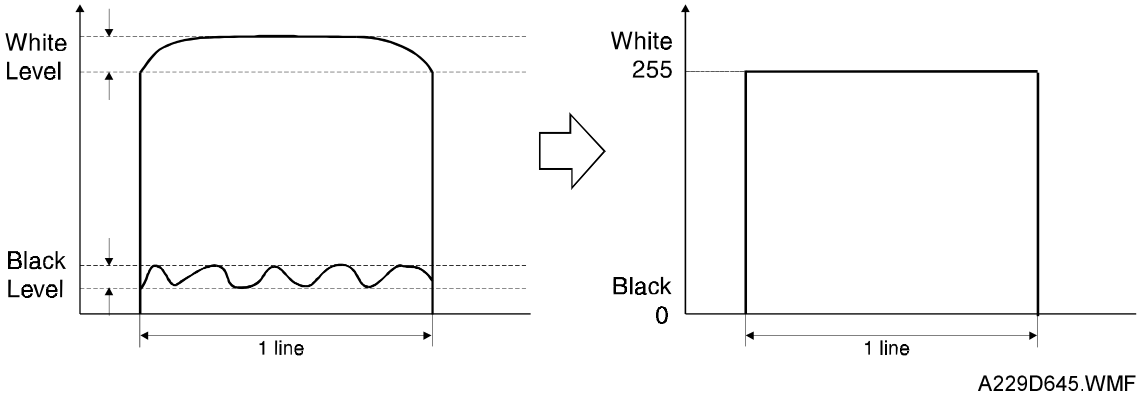
Generation Copy Mode

The image processing for generation mode is basically the same as in text mode, except that in order to prevent lines in the main scan direction from being reproduced too thickly, line width correction is applied for the final gradation treatment. Also, to reduce unwanted black dots, a weaker MTF filter is used; this ensures that isolated dots do not get bigger, and are spread out. These dots will then be deleted by the independent dot erase feature. This feature, however, is kept at a low setting to ensure that important details such as dotted lines and periods are not deleted.

With UP Mode (Copy Features – General Features – Original Mode Quality Level), the user can select ‘Soft’, ‘Normal’, ‘Sharp’, and ‘SP Mode Changed’. The settings of the SP modes indicated with an asterisk (*) are not used unless the user selects ‘SP Mode Changed’.

	Image Processing Path	**Related SP Modes**
Input Correction 1	Auto Shading	
Input Correction 2	Background Erase	SP4903-035 * (Background Erase Level)
	Independent Dot Erase	SP4903-032 (Independent Dot Erase Level)
Filtering	MTF	SP4903-019 * (MTF Filter Coefficient – Generation Copy)
Magnification	Main Scan Magnification	SP2909-001 (Main Scan Magnification)
ID Control	γ Correction	
Gradation	Grayscale Processing/Line Width Correction	SP4904-6 * (Line Width Correction Type)

2.3.6 AUTO SHADING



Two things happen during auto shading.

Black level correction

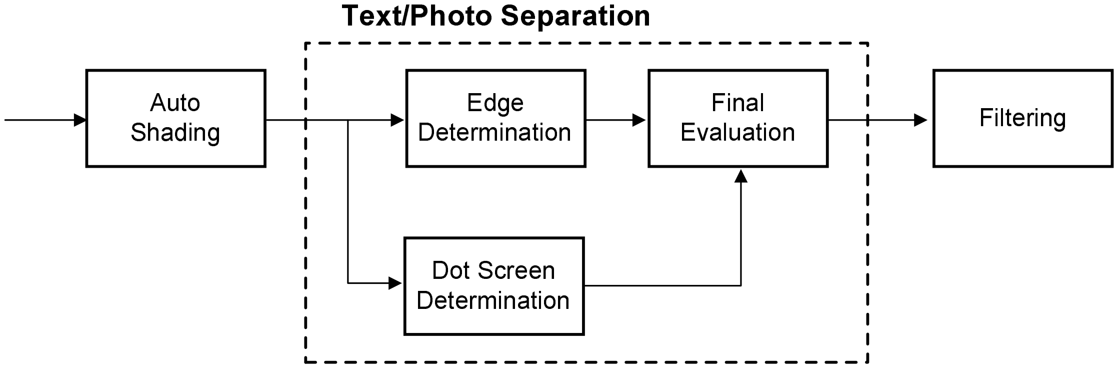
The black level is zeroed for each scan line of data by reading the dummy elements at the end of the CCD signal for each scan line, which should be black.

White level correction

The data is corrected for variations in white level across the main scan. To do this, a white reference plate is scanned before each original (book mode) or every 30 s (ADF mode). This corrects for the following effects on each pixel:

- Loss of brightness at the ends of the exposure lamp and the edges of the lens
- Variations in sensitivity among the CCD elements
- Distortions in the light path

2.3.7 TEXT/PHOTO AREA SEPARATION



A229D625.WMF

This is used only in text/photo mode.

Text/photo separation is done at two points during image processing. The first one is immediately after auto shading, and is a complex process involving comparison with surrounding pixels and the use of matrixes. The second process comes at the end of the image processing path, and is a simple process that only examines surrounding pixels as part of the error diffusion process for text/photo mode.

The above drawing shows the data path during the first text/photo area separation process.

The image data coming in after auto shading is tested by edge determination and dot screen determination at the same time to separate the image into text and photo areas. Then the results of both these tests go to a final evaluation, to identify image and text areas.

Edge Determination

Edges of letters and parts of images are detected by checking for strong contrast, continuity of black pixels, and continuity of white pixels around the black pixels.

The detected edges are treated with an MTF filter, which is part of the text/photo separation process, and not the same as the one used in the filtering step of the image processing path.

The filter strength can be changed in the main scan and sub scan directions with SP mode (SP4912-01 and 02).

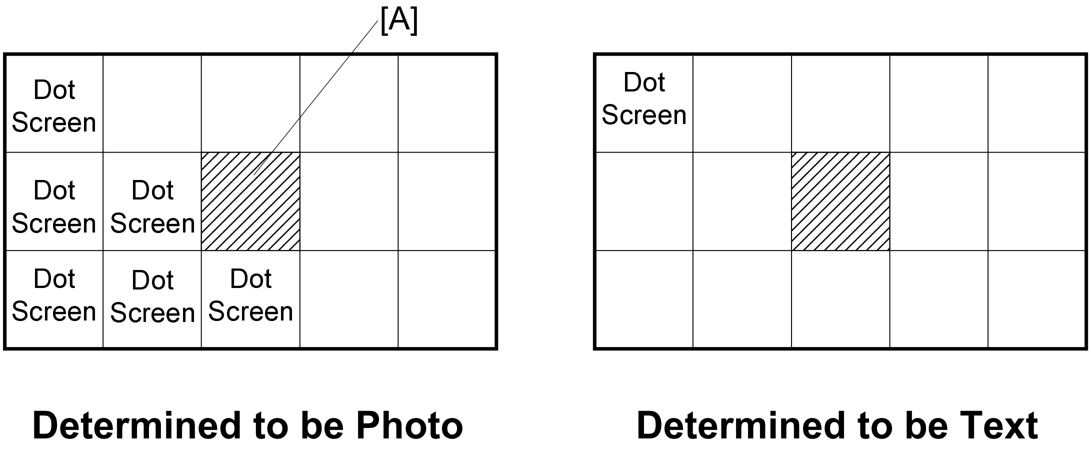
After filtering, the edge pixels are divided into four shades (black, dark gray, pale gray, and white). The threshold levels to distinguish between the shades are determined by SP4912-003 to 005.

Dot Screen Determination

The machine determines whether the pixel is in a dot screen area or not. The process can be adjusted with SP4912-017.

The page is divided into 4 x 4 blocks of pixels. Each block [A] is placed at the center of a 5 x 3 array of these blocks, and becomes either text or photo, depending on the other blocks in the 5 x 3 area .

If the number of dot screen blocks in the 5 x 3 area exceeds a threshold, the central block is determined to be an image area. (The threshold is 2: if two or more of the blocks in the 5 x 3 area are dot screen, then all the pixels in the central block are determined to be in an image area.)


[A]
Dot Screen
Dot Screen
Dot Screen
Dot Screen
Dot Screen
Dot Screen
Determined to be Photo
Dot Screen
Determined to be Text

A229D640.WMF

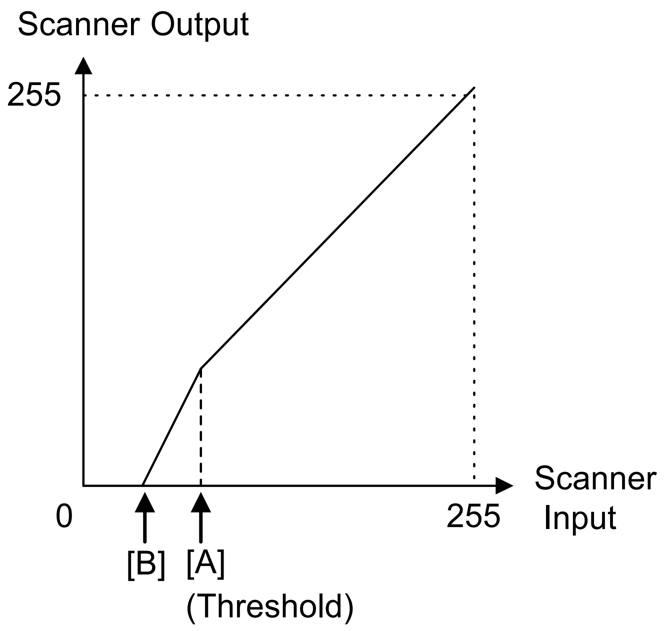
Final Evaluation

The final evaluation depends on the result of dot screen and edge determination as follows.

Dot Screen	Edge	Final Evaluation
No	No	Photo
No	Yes	Text
Yes	No	Photo
Yes	Yes	Photo

The type of filtering to be used depends on the result of the final evaluation.

2.3.8 BACKGROUND ERASE



A229D591.WMF

By default, this process is used only in text mode, text/photo mode, and generation copy mode.

Usually, dirty background is erased using Auto Image Density (ADS). However, sometimes, dirty background areas will still appear. These can be erased by Background Erase.

If any low image density data which is lower than a threshold level remains after auto shading, this data will be treated as “0” which is equal to “White”.

By inputting a larger value, darker backgrounds can be eliminated.

The threshold level can be changed with SP mode, as shown below.

SP Mode No.	Image Processing Mode	Threshold Level (Default)
SP4903-33	Text Mode	15
SP4903-34	Text/Photo Mode	15
SP4903-35	Generation Copy Mode	15

Any low image density data lower than this threshold level remaining after auto shading will be treated as background.

There is not a sudden cutoff at the threshold. Below the threshold [A], the image data is made paler than it normally would be, until at a certain point [B], it becomes white. This avoids errors during MTF filtering caused by sudden changes In the data around the threshold level area.

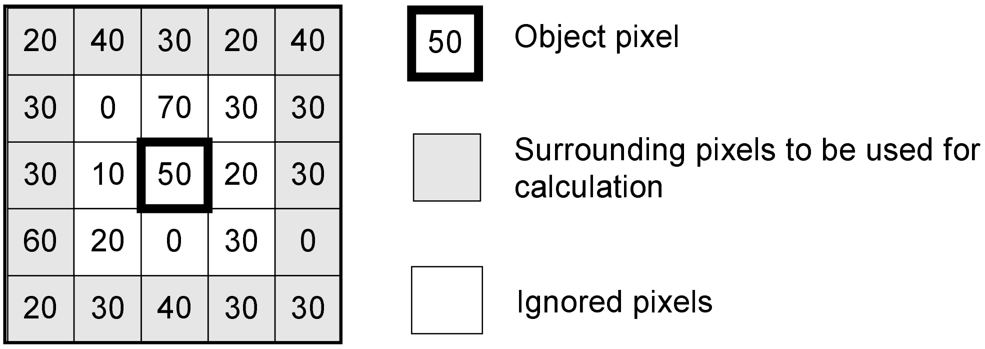
2.3.9 INDEPENDENT DOT ERASE

By default, this process is used in all image processing modes except for photo mode. This function allows independent black dots appearing on copies to be completely erased, or to be reduced in image density.

As shown in the drawing below, the software compares each pixel with the pixels in the surrounding 5 x 5 area (except for the immediately adjacent pixels).

If all of the surrounding pixels are smaller than the threshold value (stored in SP4-903-28, 30, 31 or 32), the object pixel is either changed to 0 (white) or reduced in density to an average of the surrounding pixels. This depends on the SP mode setting.

In the drawing below, the surrounding pixels are all less than 64. If the SP mode value is “12”, the object pixel value is reduced from “50” to “30”, the average value of the surrounding pixels. If the SP mode value is “4”, the object pixel is deleted (changed to white).



20	40	30	20	40
30	0	70	30	30
30	10	50	20	30
60	20	0	30	0
20	30	40	30	30

A229D592.WMF

Average of surrounding pixels:
(20 + 40 + 30 + 20 + 40 +30 + 30 + 30 + 30 + 60 + 0 + 20 + 30 + 40 + 30 + 30) / 16
= 30

The threshold level for deciding whether a dot is independent can be changed using SP mode. The default value of this threshold level is different for each image processing mode. As shown below, in Text/Photo mode, independent dots are reduced, but in Text, Pale, or Generation mode, they are erased.

SP Mode No.	Image Processing Mode	Default Value (SP Setting)
SP4903-28	Text Mode	2
SP4903-30	Text/Photo Mode	9
SP4903-31	Pale Mode	1
SP4903-32	Generation Mode	1

NOTE: Settings 0 and 8: Disable this function.
Settings 1 to 7: Erase detected independent dots
Settings 9 to 15: Reduce the density of detected independent dots

Each SP mode has 16 possible settings, as follows.

(A = Surrounding pixel with the highest value)

SP mode value	Function	SP mode value	Function
0	Disabled	8	Disabled
1	If A < 16, the central pixel is deleted (changed to white)	9	If A < 16, the density is reduced to the average
2	If A < 32, the central pixel is deleted (changed to white)	10	If A < 32, the density is reduced to the average
3	If A < 48, the central pixel is deleted (changed to white)	11	If A < 48, the density is reduced to the average
4	If A < 64, the central pixel is deleted (changed to white)	12	If A < 64, the density is reduced to the average
5	If A < 80, the central pixel is deleted (changed to white)	13	If A < 80, the density is reduced to the average
6	If A < 96, the central pixel is deleted (changed to white)	14	If A < 96, the density is reduced to the average
7	If A < 128, the central pixel is deleted (changed to white)	15	If A < 128, the density is reduced to the average

2.3.10 FILTERING, MAIN SCAN MAGNIFICATION/REDUCTION

Overview

After auto shading, the image data is processed by both filtering and main scan magnification. However, to reduce the occurrence of moiré in the image, the processing order depends on the reproduction ratio, as follows.

1. 64% reduction or less
   Main Scan Reduction → Filtering
2. 65% reduction or higher
   Filtering → Main Scan Magnification

Filtering

By default, an individual MTF filter is used for each image processing mode, to enhance the desired image qualities. (For photo mode, smoothing filter is selected as the default setting.)

A stronger MTF filter emphasizes sharpness and leads to better reproduction of low image density areas, but may lead to the occurrence of moiré in the image.

When adjusting a filter, adjust the coefficient first. If that does not satisfy the user, then adjust the strength (it may be necessary to do some fine tuning with the coefficient after adjusting the strength).

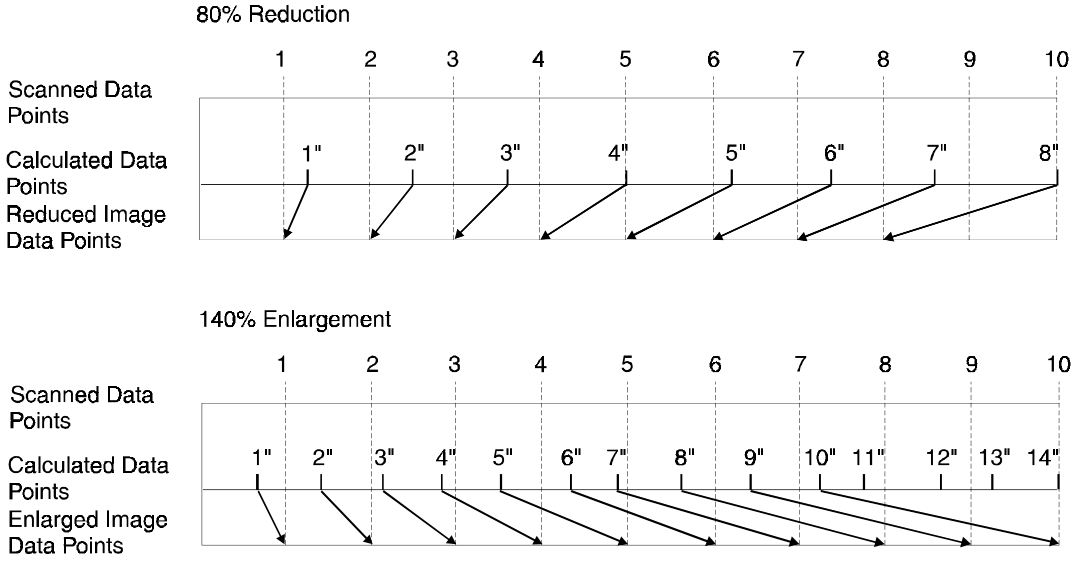
For text mode, the filter coefficient and strength can be adjusted in the main scan and sub scan directions individually. This allows the copy quality to be adjusted more precisely, to match the originals normally scanned by a particular customer.

Example: In a case when vertical lines (sub scan) are reproduced clearly, but horizontal lines (main scan) are not reproduced clearly, the technician can adjust the main scan filter only.

For photo mode, the smoothing filter is the default filter, but the MTF filter may be selected by SP mode. This is effective when putting more weight on improving the resolution when copying from “continuous tone” originals.

For text/photo mode, a different MTF filter is applied for the text and photo areas that were determined during text/photo separation. The filter type for each area may be changed with SP mode. This is done in SP4903-017 for text areas, and SP4903-047 for photo areas.

Main scan magnification/reduction


80% Reduction
1 2 3 4 5 6 7 8 9 10
Scanned Data Points
Calculated Data Points
1" 2" 3" 4" 5" 6" 7" 8"
Reduced Image Data Points
140% Enlargement
1 2 3 4 5 6 7 8 9 10
Scanned Data Points
Calculated Data Points
1" 2" 3" 4" 5" 6" 7" 8" 9" 10" 11" 12" 13" 14"
Enlarged Image Data Points

A229D646.WMF

Reduction and enlargement in the sub scan direction are done by changing the scanner speed. However, reduction and enlargement in the main scan direction are handled by the IPU chip on the SBICU board.

Scanning and laser writing are done at a fixed pitch (the CCD elements cannot be squeezed or expanded). So, to reduce or enlarge an image, imaginary points are calculated that would correspond to a physical enlargement or reduction of the image. The correct image density is then calculated for each of the imaginary points based on the image data of the nearest four true points. The calculated image data then becomes the new (reduced or enlarged) image data.

Main scan magnification can be disabled with SP 4903-5 to test the IPU IC.

2.3.11 GAMMA (γ) CORRECTION

Gamma correction ensures accurate generation of the various shades in the gray scale from black to white, accounting for the characteristics of the scanner and printer.

Scanner gamma correction corrects the data output to the IPU to account for the characteristics of the scanner (e.g., CCD response, scanner optics).

Printer gamma correction corrects the data output from the IPU to the laser diode to account for the characteristics of the printer (e.g., the characteristics of the drum, laser diode, and lenses).

The data for the scanner and printer gamma correction are fixed and stored in the memory. There are no SP adjustments in this machine.

2.3.12 GRADATION PROCESSING

There are two basic types of gradation processing

- Printing multi-bit per pixel data as it is (i.e., keeping many image density levels available for each pixel; in this machine)
- Reducing the number of possible output levels per pixel, by using only a few of the range of possible output levels

Various processes are available to try to reproduce various types of original as faithfully as possible.

In this model, these are three processes:

1. Grayscale processing
2. Error diffusion
3. Dithering

These three processes are used as follows (default setting).

Text mode	Grayscale processing
Text/photo mode:	Error diffusion
Photo mode:	Error diffusion or dithering
Generation Copy Mode:	Grayscale processing + line width correction
Pale mode:	Grayscale processing

The above information is expressed in the diagram in the Image Processing Path section.

Error Diffusion and Dithering

The error diffusion process reduces the difference in contrast between light and dark areas of a halftone image. Each pixel is corrected using the difference between it and the surrounding pixels. The corrected pixels are then corrected using an error diffusion matrix.

In the dithering process, each pixel is compared with a pixel in a dither matrix. Several matrixes are available, to increase or decrease the detail on the copy.

Comparing with dithering, error diffusion gives a better resolution, and is more suitable for “continuous toned” originals. On the other hand, dithering is more suitable for “screen printed” originals.

In Photo Mode, when the user selects “Normal Paper” and “Continuous Tone”, error diffusion is used. However, if the user selects “Screen Printed”, dither processing is used. If the user selects ‘SP Mode Changed’, then either dithering or one of two types of error diffusion can be selected with SP4904-024,. When dithering is selected, the setting of SP4904-002 will decide which dithering matrix is used.

In Text/Photo Mode, the error diffusion process that is used depends on the image area type (text or photo) as shown below. Therefore, before error diffusion, a simple text/photo separation process is performed (as mentioned earlier, in the Text/Photo Separation section).

Area	Error Diffusion Type	Related SP Mode
Text Area	1 dot error diffusion	SP4904-007
Photo Area	2 dot error diffusion	SP4904-008

Grayscale Processing

The eight-bit data arriving from the gamma correction circuit is passed on unchanged.

2.3.13 LINE WIDTH CORRECTION

This function is effective only in generation copy mode.

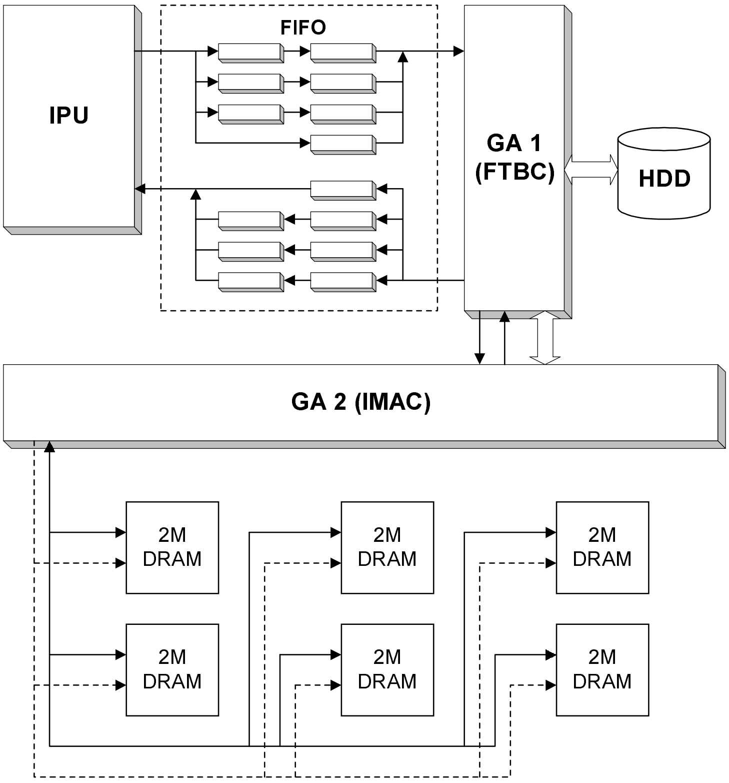
Usually, lines will bulge in the main scan direction as a result of the negative/positive development system that is used in this model. So, pixels on edges between black and white areas are compared with adjacent pixels, and if the pixel is on a line, the line thickness will be reduced.

The line width correction is done in the IPU chip.

The line width correction type can be selected with SP4904-6.

2.3.14 COMPRESSION AND STORAGE

Circuit

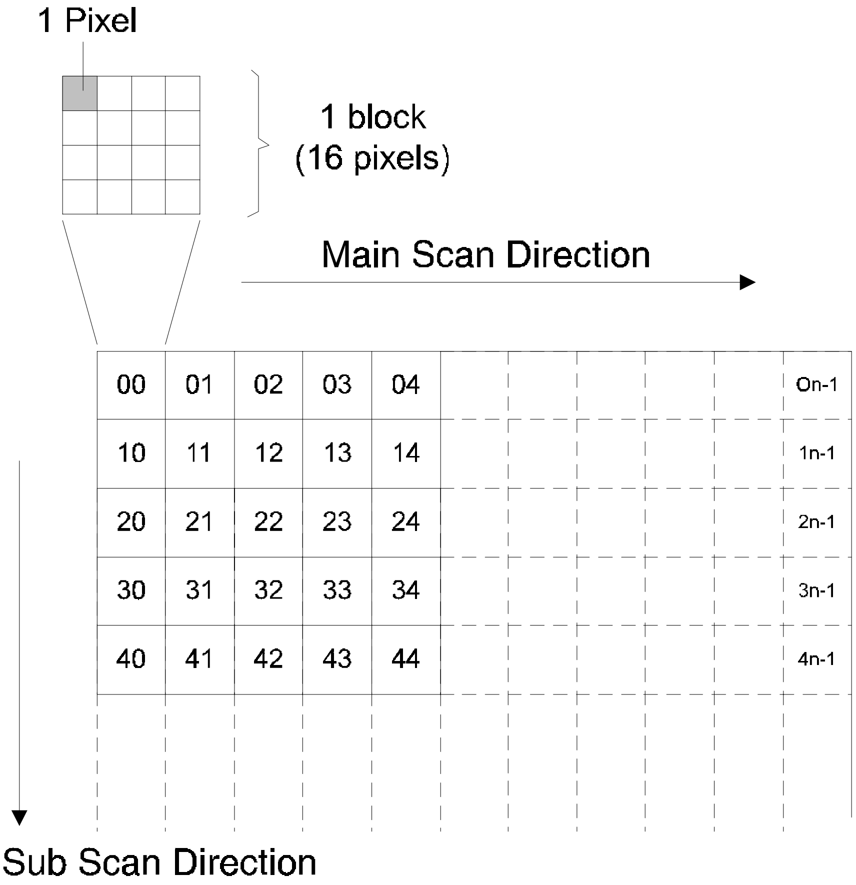

IPU
FIFO
GA 1
(FTBC)
HDD
GA 2 (IMAC)
2M DRAM
2M DRAM
2M DRAM
2M DRAM
2M DRAM
2M DRAM

A229D626.WMF

The compression and storage circuit consists of the GA1 IC, GA2 IC, DRAM, and the hard disk drive. The functions of each device are as follows.

GA 1:	Compressing/decompressing the 8-bit image data Image rotation Image data transfer to the HDD, FIFO memory, and GA2 Controls the HDD
GA 2:	Compressing and decompressing the image data Image rotation Image transfer to the DRAM, and GA 1 Image repeat Image combine
DRAM (12 MB):	Stores compressed data from GA1
Hard Disk Drive:	Stores compressed data Electrical sort Misfeed back-up

Compression


1 Pixel
1 block
(16 pixels)
Main Scan Direction
00
01
02
03
04
0n-1
10
11
12
13
14
1n-1
20
21
22
23
24
2n-1
30
31
32
33
34
3n-1
40
41
42
43
44
4n-1
Sub Scan Direction

A229D627.WMF

After image processing, the image data from the IPU first goes to the FIFO block. This block consists of 14 FIFO memories (7 for data input, 7 for data output). FIFOs are used because four scan lines are compressed at the same time to improve the image compression speed.

The image data then goes to the GA1 IC, where the image data for a whole page is divided into many blocks (the block size is 4 x 4 pixels) as shown above left. Then, each block is compressed and sent to DRAM through GA2 to store the data.

When the HDD is ready to receive the data, the data passes to GA2 where it is compressed some more, and sent to the HDD.

When it is time to output the data, the data flow is reversed, and the data is decompressed. The decompressed data goes back to the FIFO block.

Image Rotation

This copier contains 12 MB of DRAM. This is enough to hold two A4 (LT) size images (this allows the user to scan one original while printing another).

2.4 LASER EXPOSURE

2.4.1 OVERVIEW

This machine uses two laser diodes to produce electrostatic images on an OPC drum. The laser diode unit converts image data from the SBICU board into laser pulses, and the optical components direct these pulses to the drum.

Exposure of the drum by the laser beam creates the latent image. The laser beam makes the main scan while drum rotation controls the sub scan.

The combined strength of both beams is 0.5 mW on the drum surface at a wavelength of 780 nm.

The polygon motor speed is as follows.

Resolution	Modes	Motor Speed (rpm)
400 dpi	Copy, Printer	Approx. 25984
600 dpi	Printer	Approx. 38976

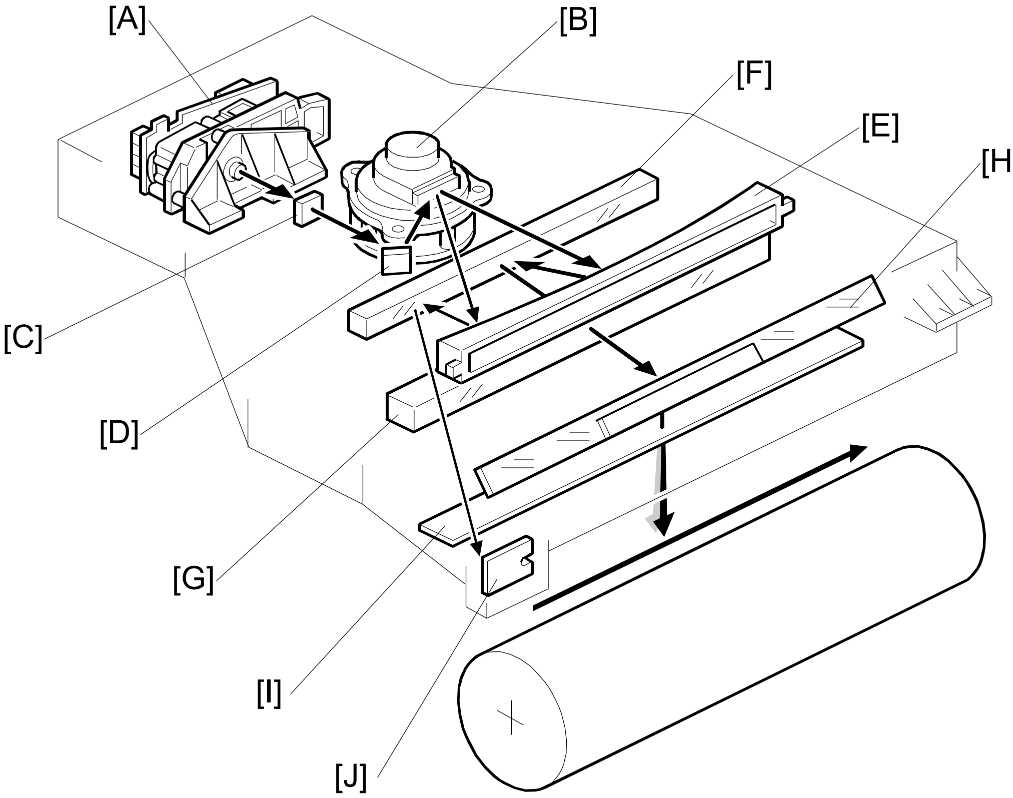
There are up to 16 image density levels for each pixel. To realize this, this machine uses a form of pulse width modulation. In this machine, pulse width modulation consists of the following processes:

- Laser diode pulse positioning
- Laser diode power/pulse width modulation

Laser diode power and pulse width modulation is done by the laser diode drive board (LDDR). Briefly, the width of the laser pulse for a pixel depends on the output level (from 0 to 15) required for the pixel.

This machine can also change the laser pulse position (at the left side of the pixel, at the center, or at the right side) automatically, depending on the location of the image pixel so that the edges of characters and lines become cleaner. There is no SP mode adjustment for this, unlike in some earlier models.

2.4.2 OPTICAL PATH



A229D522.WMF

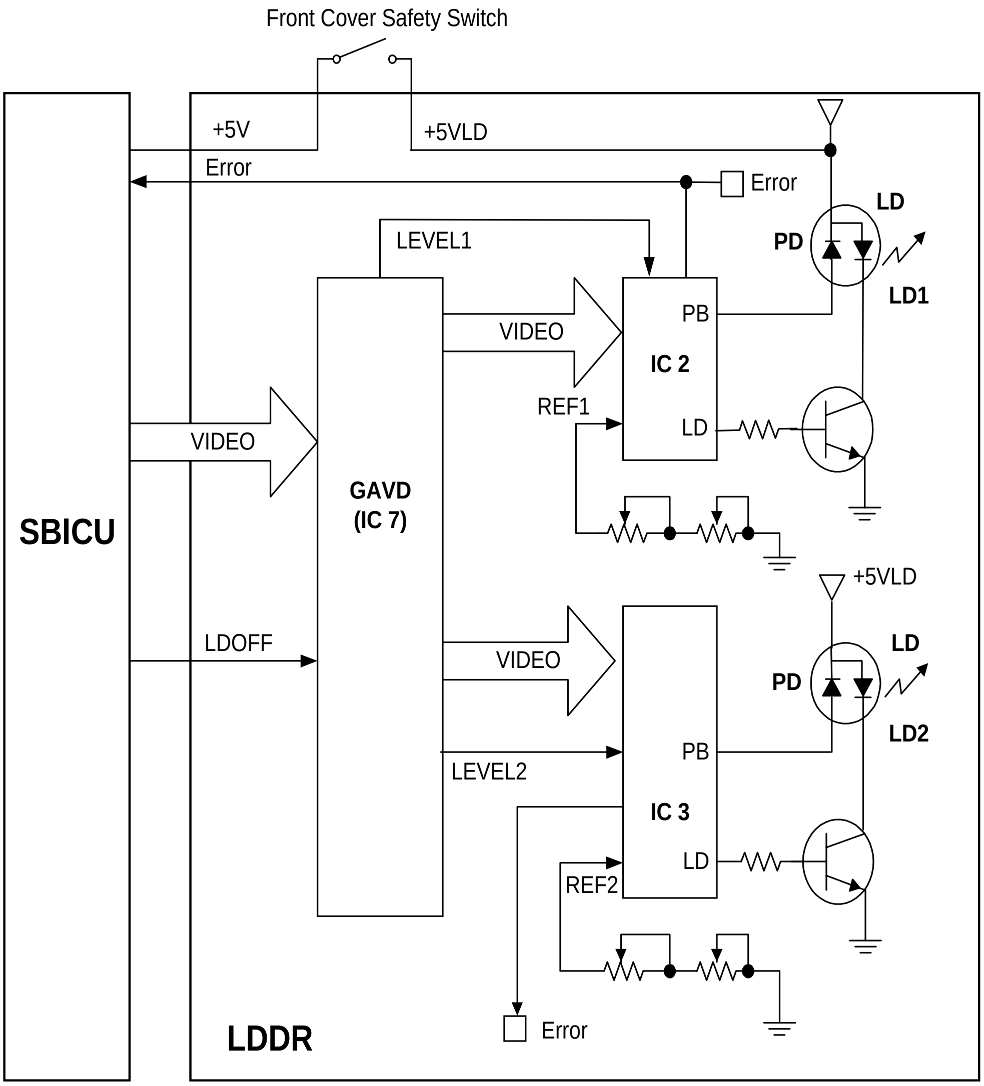
The output path from the laser diode to the drum is shown above.

The LD unit [A] outputs two laser beams to the polygonal mirror [B] (six mirrors) through the cylindrical lens [C] and the 1st mirror [D].

Each surface of the polygon mirror reflects two full main scan lines. The laser beams go to the F-theta mirror [E], mirror [F], BTL (barrel toroidal lens) [G], and mirror [H]. Then these laser beams go to the drum through the toner shield glass [I].

The laser synchronizing detector [J] determines the main scan starting position.

2.4.3 AUTO POWER CONTROL


Front Cover Safety Switch
+5V
+5VLD
Error
Error
LD
PD
LD1
LEVEL1
PB
VIDEO
IC 2
REF1
LD
VIDEO
GAVD
(IC 7)
SBICU
+5VLD
LDOFF
VIDEO
LD
PD
LD2
PB
LEVEL2
IC 3
LD
REF2
LDDR
Error

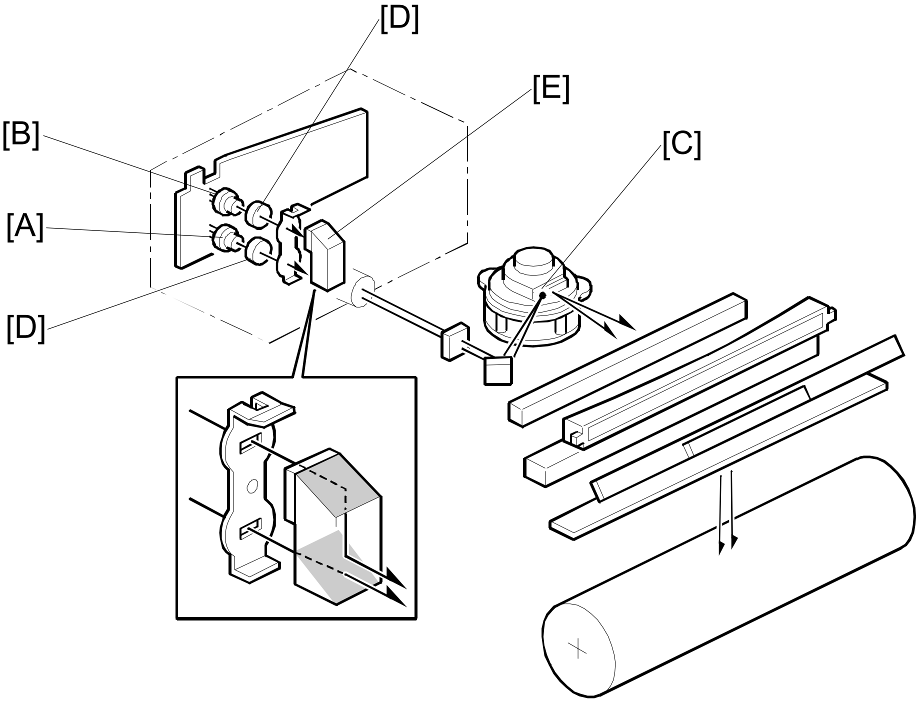
A229D523.WMF

IC2 and IC3 on the LDDR drive the laser diodes. Even if a constant electric current is applied to the laser diode, the intensity of the output light changes with the temperature. The intensity of the output decreases as the temperature increases.

In order to keep the output level constant, IC2 and IC3 monitor the current passing through the photodiode (PD). Then they increase or decrease the current to the laser diode as necessary, comparing it with the reference levels (REF1 and REF2). This auto power control is done just after the machine is turned on and during printing while the laser diode is active.

The reference levels are adjusted on the production line. Do not touch the variable resistors on the LDDR in the field.

2.4.4 DUAL BEAM WRITING



A229D524.WMF

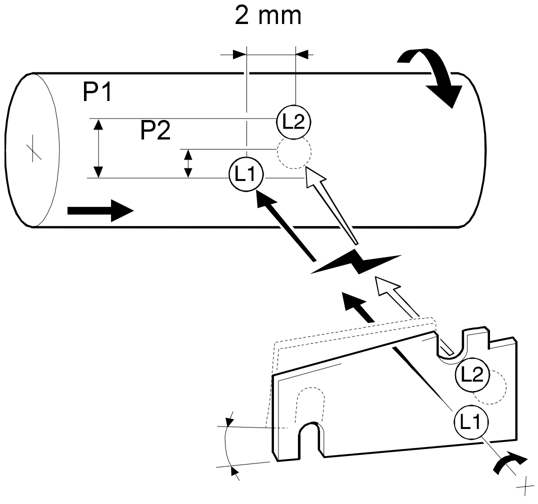
This LD unit has two laser diodes; LD1 [A] and LD2 [B] for writing the image. This means that each face of the polygon mirror writes two main scan lines, and twelve main scans are produced when the polygon mirror rotates once. The reasons for this mechanism are as follows.

1) To reduce the polygon motor rotation speed
2) To reduce the noise generated by the polygon motor
3) To reduce the frequency of the image data clock

Two laser beams are transferred to the polygon mirror [C] through collimating lens [D] and prism [E]. The two laser beams arrive on the drum surface about 2 mm away from each other in the main scan direction and about 0.06 mm (at 400 dpi) in the sub scan direction (see the next page).

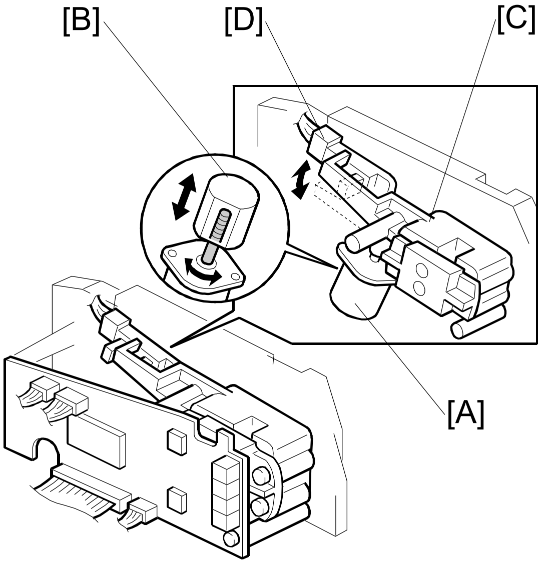
The reason for the two-mm difference in the main scan direction is so that the machine can detect a laser synchronization signal for each beam.

2.4.5 LASER BEAM PITCH CHANGE MECHANISM



P1: 400 dpi
P2: 600 dpi

A229D525.WMF



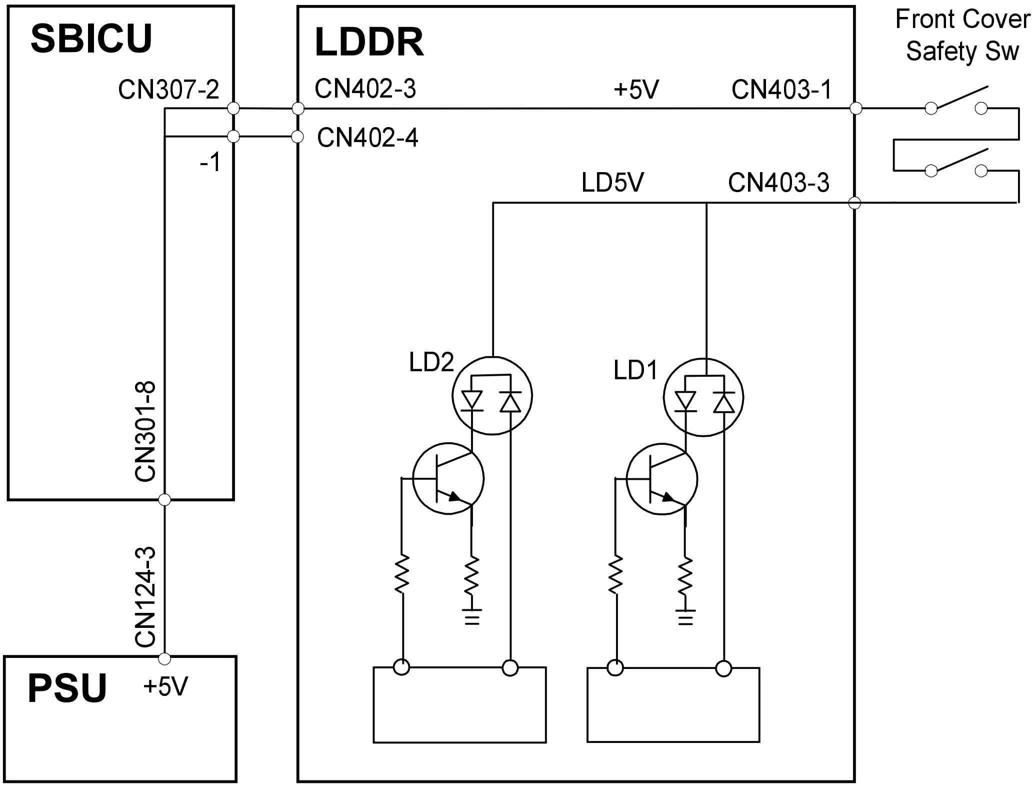
A229D516.WMF

A printer option is available for this machine and the resolution of the printer is 600 dpi. The machine changes the resolution between 400 and 600 dpi by rotating the LD unit.

When the LD positioning motor [A] turns, the metal block [B] (which contacts the LD unit housing [C]) moves up and down. This changes the position of the L2 laser beam (L1 does not move).

Both LD unit positions are at fixed distances from the LD home position sensor [D] (measured by motor pulses). Usually, the LD unit moves directly to the proper position. However, when the number of times that the resolution has changed reaches the value of SP2-109-5, the LD unit moves to the home position (the home position sensor activates), then it moves to the proper position. This recalibrates the LD unit positioning mechanism.

2.4.6 LD SAFETY SWITCHES


SBICU
LDDR
Front Cover Safety Sw
CN307-2
CN402-3
+5V
CN403-1
CN402-4
-1
LD5V
CN403-3
LD2
LD1
CN301-8
CN124-3
PSU
+5V

A229D500.WMF

To ensure technician and user safety and to prevent the laser beam from inadvertently switching on during servicing, there are two safety switches located at the front cover. These two switches are installed in series on the LD5 V line coming from the power supply unit (PSU) through the SBICU board.

When the front cover or the upper right cover is opened, the power supply to the laser diode is interrupted.

2.5 DRUM UNIT

2.5.1 PROCESS CONTROL

Overview

The drum potential will gradually change because of the following factors.

- Dirty optics or exposure glass
- Dirty charge corona casing and grid plate
- Changes in drum sensitivity

To maintain good copy quality, the machine does the following just after the main switch has been turned on (if the fusing temperature is less than 100 °C and SP3-901 is on).

1) Potential Sensor Calibration

2) V_{SG} Adjustment

3) V_G(Grid Voltage) Adjustment

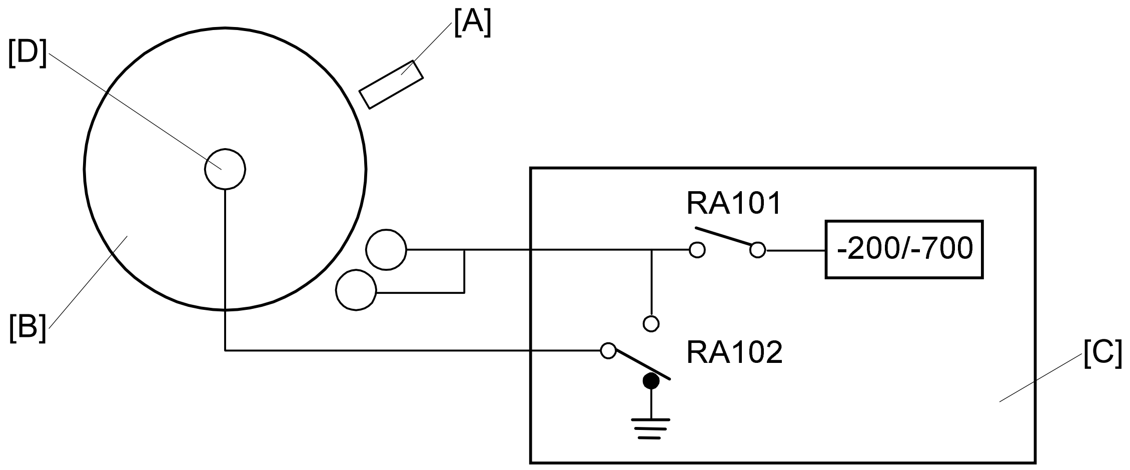
4) LD Power Adjustment

5) V_{REF} Update

This process is known as ‘Process Control Initial Setting’. The rest of this section will describe these steps in more detail.

Processes 1, 3, and 4 in the above list compensate for changes in drum potential. Processes 2 and 5 are for toner density control; see the “Development and Toner Supply” section for more details.

Drum potential sensor calibration



A229D641.WMF

The drum potential sensor [A] detects the electric potential of the drum surface [B].

Since the output of the sensor is affected by environmental conditions, such as temperature and humidity, the sensor needs recalibration at times. This is done during process control initial setting.

The development power pack [C] has two relay contacts. Usually RA102 grounds the drum. However, to calibrate the sensor, the SBICU switches RA102 and RA101 over, which applies the power pack output voltage to the drum shaft [D].

The machine automatically calibrates the drum potential sensor by measuring the output of the sensor when –200V and –700V are applied to the drum. From these two readings, the machine can determine the actual drum potential from the potential sensor output that is measured during operation.

During calibration, if the rate of change in drum potential sensor response to applied voltage is out of the target range, SC370 is logged and auto process control turns off. The V_G and LD power adjustments are skipped; V_G is set to the value stored in SP2-001-01, and LD power is set to the values stored in SP2-103.

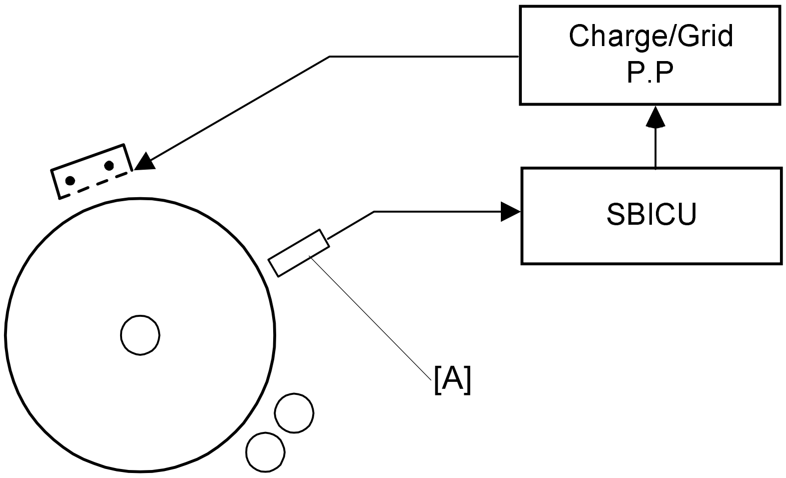
V_{SG} adjustment

This calibrates the ID sensor output for a bare drum to 4.0 ± 0.2V. It does this by changing the intensity of the light shining on the drum from the sensor. This is done automatically during process control initial setting, and it can also be done manually with SP3-001-002.

If the ID sensor output cannot be adjusted to within the standard, SC350 is logged and toner density control is done using the TD sensor only.

For details of how the machine determines an abnormal sensor detection, see section 7 (Troubleshooting).

VG Adjustment



A229D642.WMF

The potential on unexposed areas of the drum (VD) gradually changes during drum life. To keep VD constant, the grid voltage (VG) is adjusted during process control initial setting.

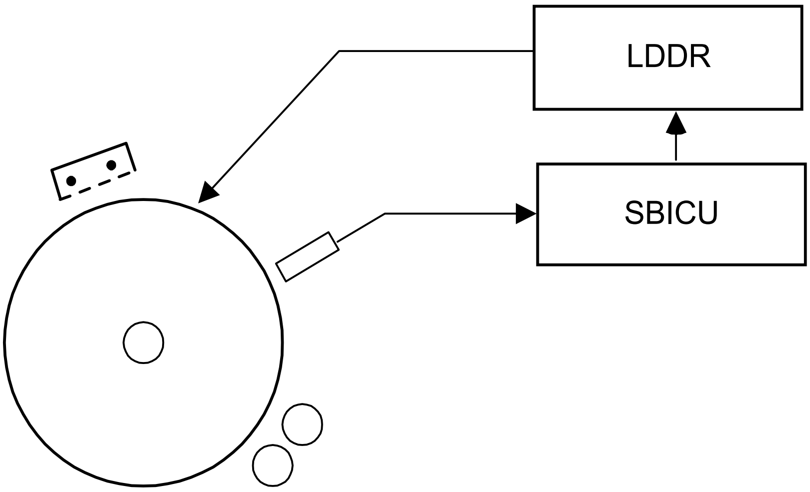
The SBICU checks VD using the drum potential sensor [A]. If it is not within the target range (-900V +– 10V), the SBICU adjusts VG (Grid Voltage) through the Charge/Grid power pack to get the correct target voltage.

The most recently detected values can be displayed with SP3-902-2 (VD) and 3-902-4 (VG).

If the CPU cannot get VD within the target range by changing VG, VG is set to the previous value and SC 370 is logged.

For details of how the machine determines an abnormal sensor detection, see section 7 (Troubleshooting).

LD power adjustment



A229D643.WMF

This adjustment uses the drum potential sensor to keep the ID sensor pattern at the same density, so that VREF will be updated correctly (see the next page).

The VH pattern is developed using the current LD power (the density is the same as the ID sensor pattern). The drum potential sensor detects the potential on this pattern. The LD power is adjusted until VH becomes –300V +–20V.

This is done only during process control initial setting.

The latest VH can be displayed using SP3-902-3. The corrected LD power can be displayed using SP3-902-5 (the default is stored in SP2-103-1-4). See “Laser exposure” for more details about laser power.

If VH cannot be adjusted to within the standard within 25 attempts, LD power is set to the latest value (the one used for the 25th attempt) and SC 370 is logged.

For details of how the machine determines an abnormal sensor detection, see section 7 (Troubleshooting).

VREF Update

The TD sensor reference voltage (VREF) is updated to stabilize the concentration of toner in the development unit as follows;

New VREF = Current VREF + ΔVREF

ΔVREF is determined using the following Vsp/Vsg and VREF– VT table

		Vsp/Vsg (B)			
		B < 0.055	0.055 < B =< 0.07	. . . .	0.15 < B
VREF– VT (A)	A =< –0.2	0.25	0.22	:	–0.03
	–0.2< A =<–0.1	0.25	0.22	:	–0.05
	: :	: :	: :	: :	: :
	0.2 < A	0	0.05	:	–0.25

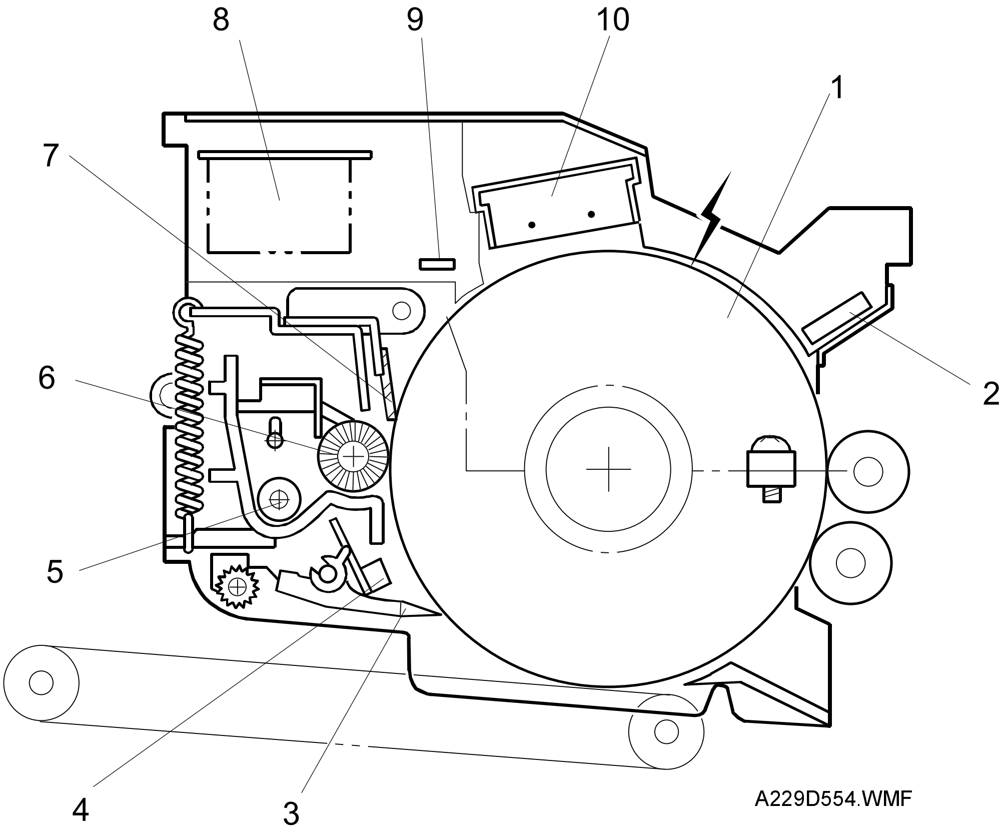
VT : TD Sensor Output

When SC350 (ID Sensor Abnormal) is generated, VREF is not updated. The machine uses the current value.

VREF is updated during process control initial setting. It is also updated if both of the following conditions exist:

- 50 or more copies have been made since the last VREF update
- The copy job is finished

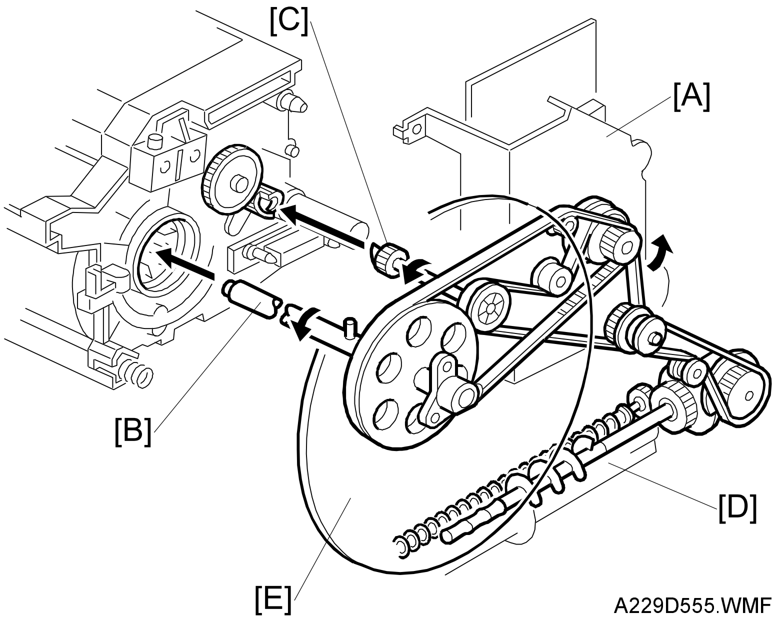
2.5.2 DRUM UNIT COMPONENTS



The drum unit consists of the components shown in the above illustration. An organic photoconductor drum (diameter: 100 mm) is used for this model.

1. OPC Drum
2. Drum Potential Sensor
3. Pick-off Pawl
4. Image Density Sensor
5. Toner Collection Coil
6. Cleaning Brush
7. Cleaning Blade
8. Charge Power Pack
9. Quenching Lamp
10. Charge Corona Unit

2.5.3 DRIVE MECHANISM



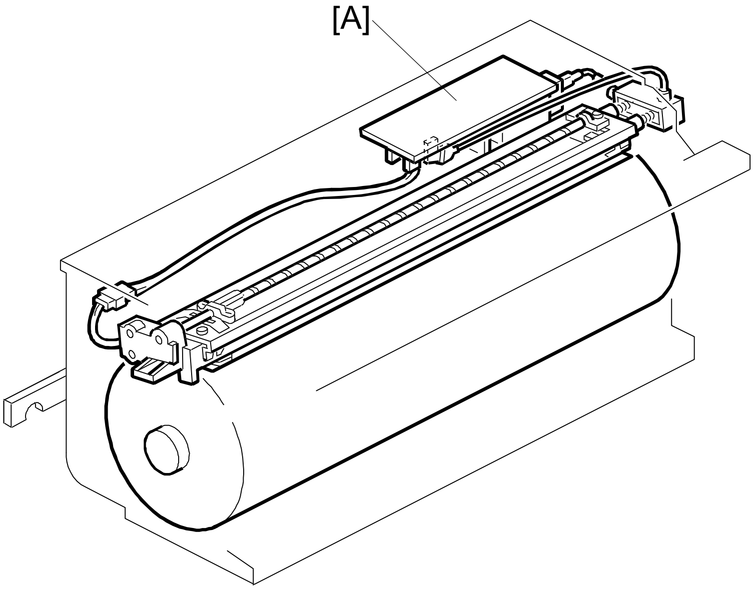
The drive from the drum motor [A] is transmitted to the drum, the cleaning unit and the toner recycling unit [D] through some timing belts, gears, the drum drive shaft [B], and the cleaning unit coupling [C].

The drum motor has a drive controller, which outputs a motor lock signal when the rotation speed is out of the specified range.

The fly-wheel [E] on the end of the drum drive shaft stabilizes the rotation speed.

2.5.4 DRUM CHARGE

Overview



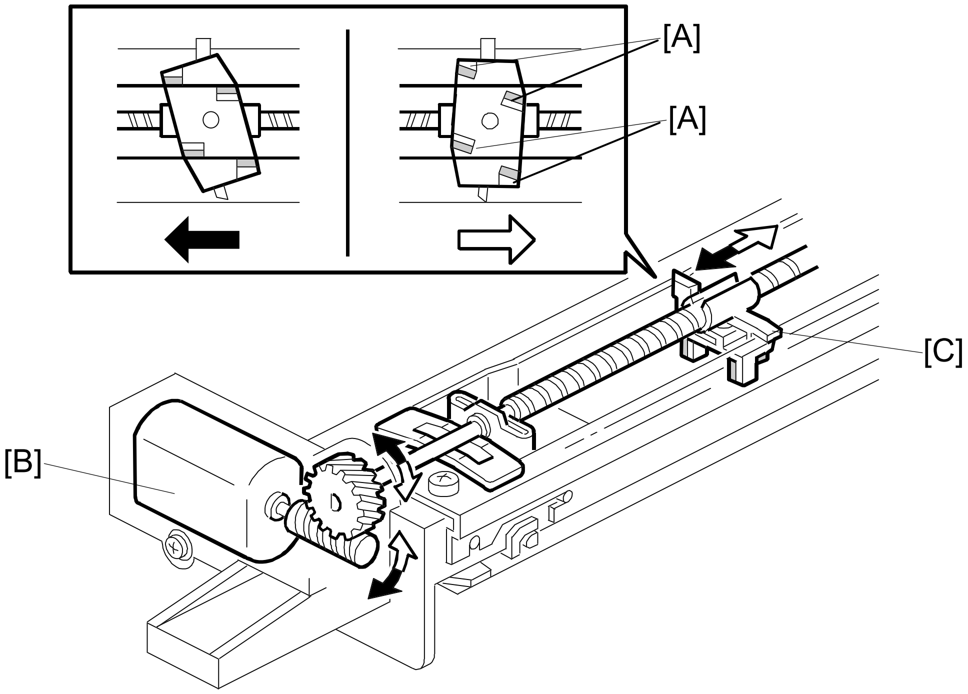
A229D557.WMF

This copier uses a double corona wire scorotron system to charge the drum. Two corona wires are needed to give a sufficient negative charge to the drum surface. The stainless steel grid plate makes the corona charge uniform and controls the amount of negative charge on the drum surface by applying a negative grid bias voltage.

The charge power pack [A] gives a constant corona current to the corona wires (-1200 µA).

The bias voltage to the grid plate is automatically controlled to maintain the correct image density in response to changes in drum potential caused by dirt on the grid plate and charge corona casing. This is described in the Process Control section in more detail.

Charge Corona Wire Cleaning Mechanism



A229D558.WMF

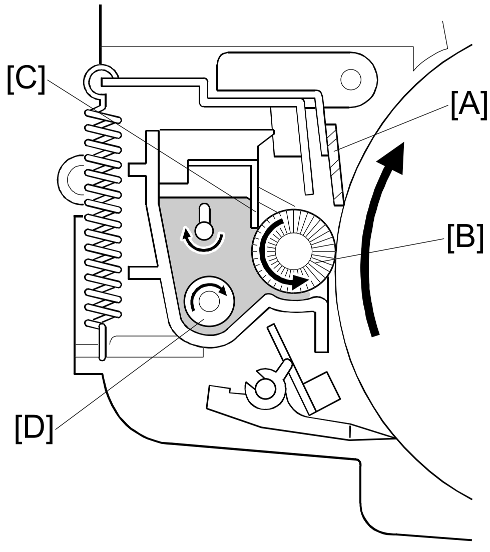
Air flowing around the charge corona wire may deposit toner particles on the corona wires. These particles may interfere with charging and cause low density bands on copies.

The wire cleaner pads [A] automatically clean the wires to prevent such a problem.

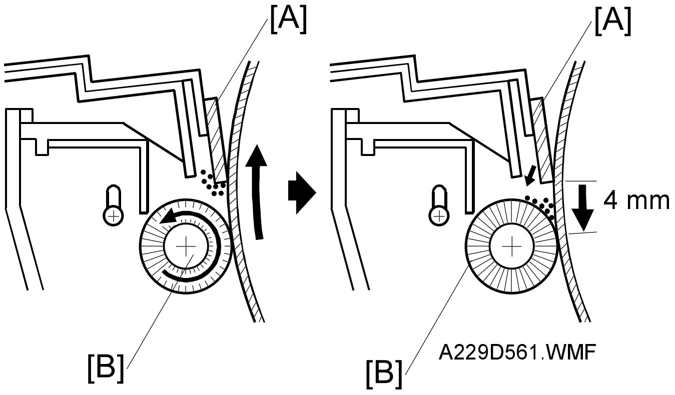
The wire cleaner is driven by a dc motor [B]. Normally the wire cleaner [C] is located at the front end (this is the home position). Just after the main switch is turned on, the wire cleaner motor turns on to bring the wire cleaner to the rear and then back to the home position. When the wire cleaner moves from the rear to the home position (black arrow in the illustration), the wire cleaner pads clean the wires. This is only done when 5000 or more copies have been made since the wires were cleaned last, but only if the fusing temperature is less than 100 °C

2.5.5 DRUM CLEANING AND TONER RECYCLING

Overview



A229D560.WMF



A229D561.WMF

This copier uses a counter blade system to clean the drum. In a counter blade system, the drum cleaning blade [A] is angled against drum rotation. The counter blade system has the following advantages:

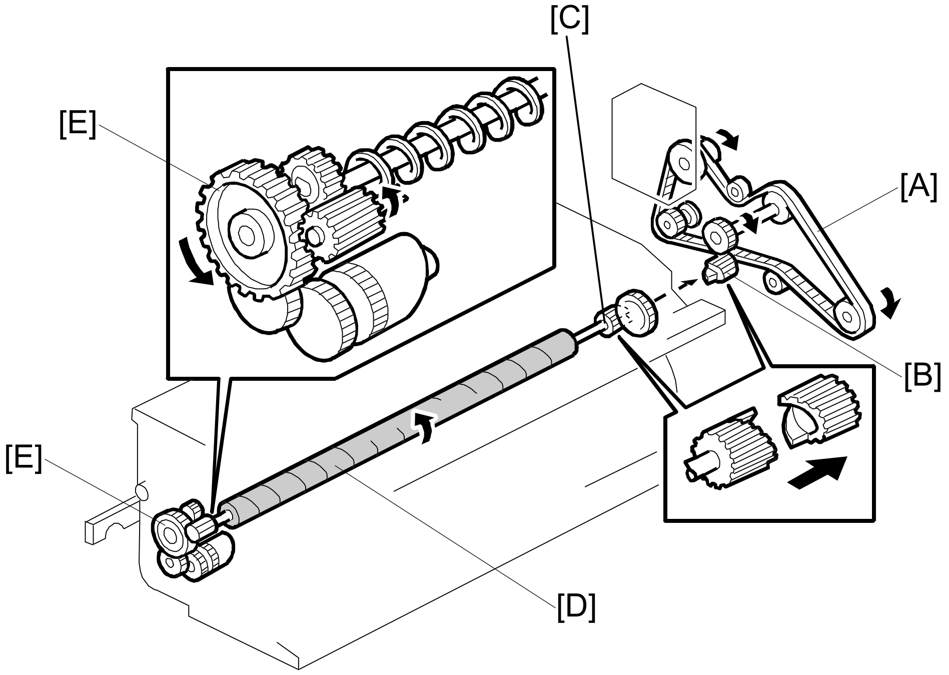
- Less wearing of the cleaning blade edge
- High cleaning efficiency

Due to the high efficiency of this cleaning system, the pre-cleaning corona and cleaning bias are not used for this copier.

The cleaning brush [B] supports the cleaning blade. The brush removes toner from the drum surface and any remaining toner is scraped off by the cleaning blade. Toner on the cleaning brush is scraped off by the mylar [C] and falls onto the toner collection coil [D]. The coil transports the toner to the toner collector bottle.

To remove any accumulated toner at the edge of the cleaning blade, the drum turns in reverse for about 4 mm at the end of every copy job. The accumulated toner is deposited on the drum and is removed by the cleaning brush.

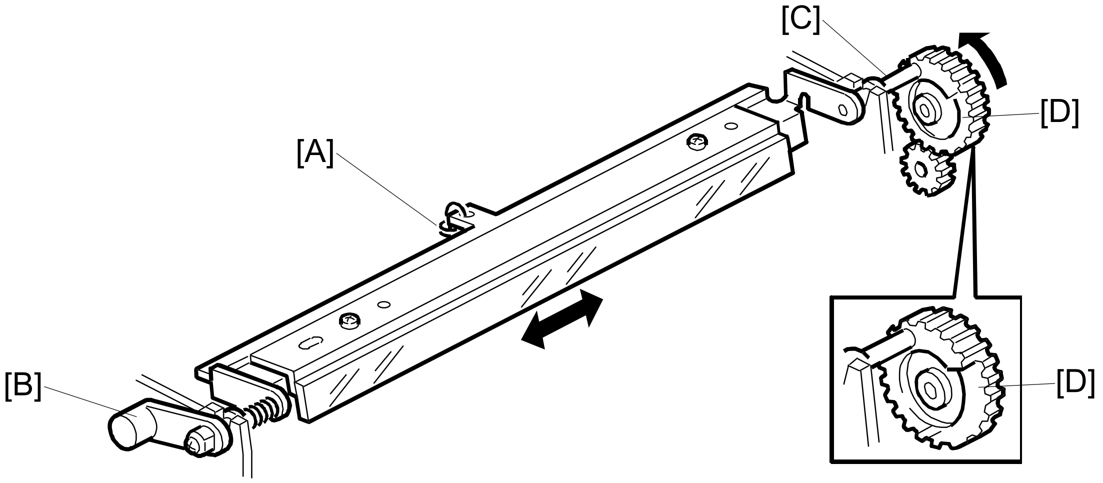
Drive Mechanism



A229D562.WMF

Drive from the drum motor is transmitted to the cleaning unit drive gear via the timing belt [A] and the cleaning unit coupling [B]. The cleaning unit drive gear [C] then transmits the drive to the front through the cleaning brush [D]. The gear at the front drives the toner collection coil gear [E].

Cleaning Blade Pressure Mechanism and Side-to-Side Movement



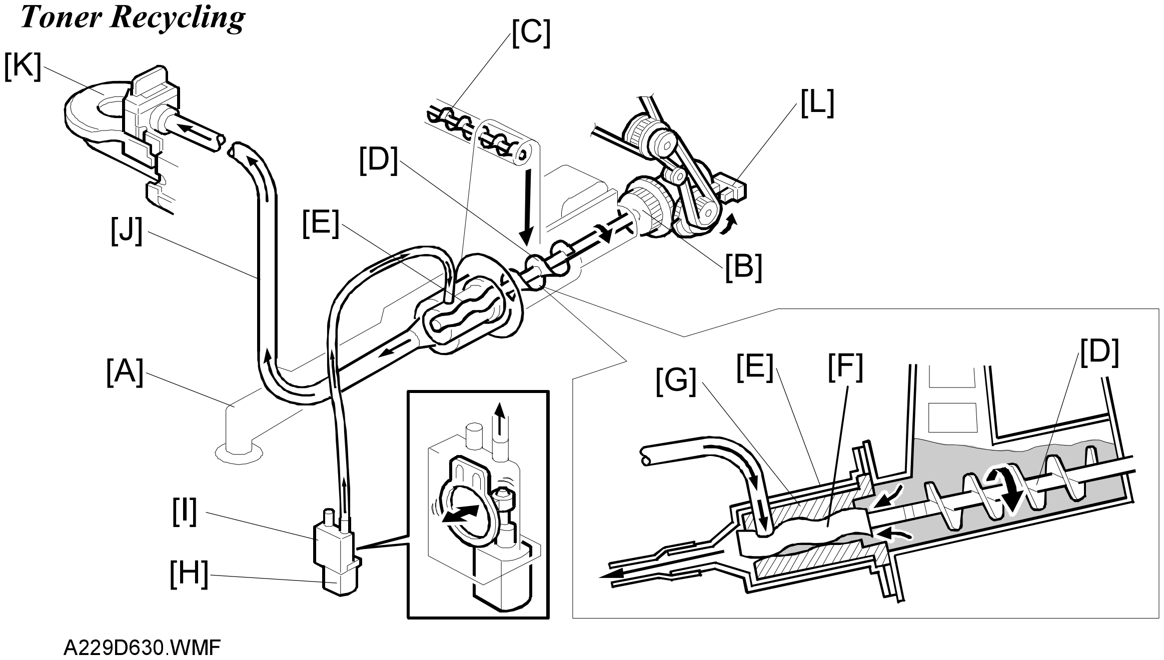
A229D563.WMF

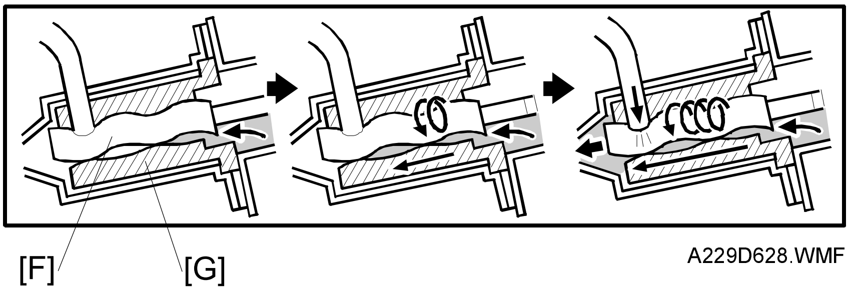
The spring [A] always pushes the cleaning blade against the drum. The cleaning blade pressure can be manually released by pushing up the release lever [B]. To prevent cleaning blade deformation during transportation, the release lever must be locked in the pressure release (upper) position.

The pin [C] at the rear end of the cleaning blade holder touches the cam gear [D], which moves the blade from side to side. This movement helps to disperse accumulated toner to prevent early blade edge wear.

Toner Recycling and Waste Toner Collection Mechanism

Toner Recycling





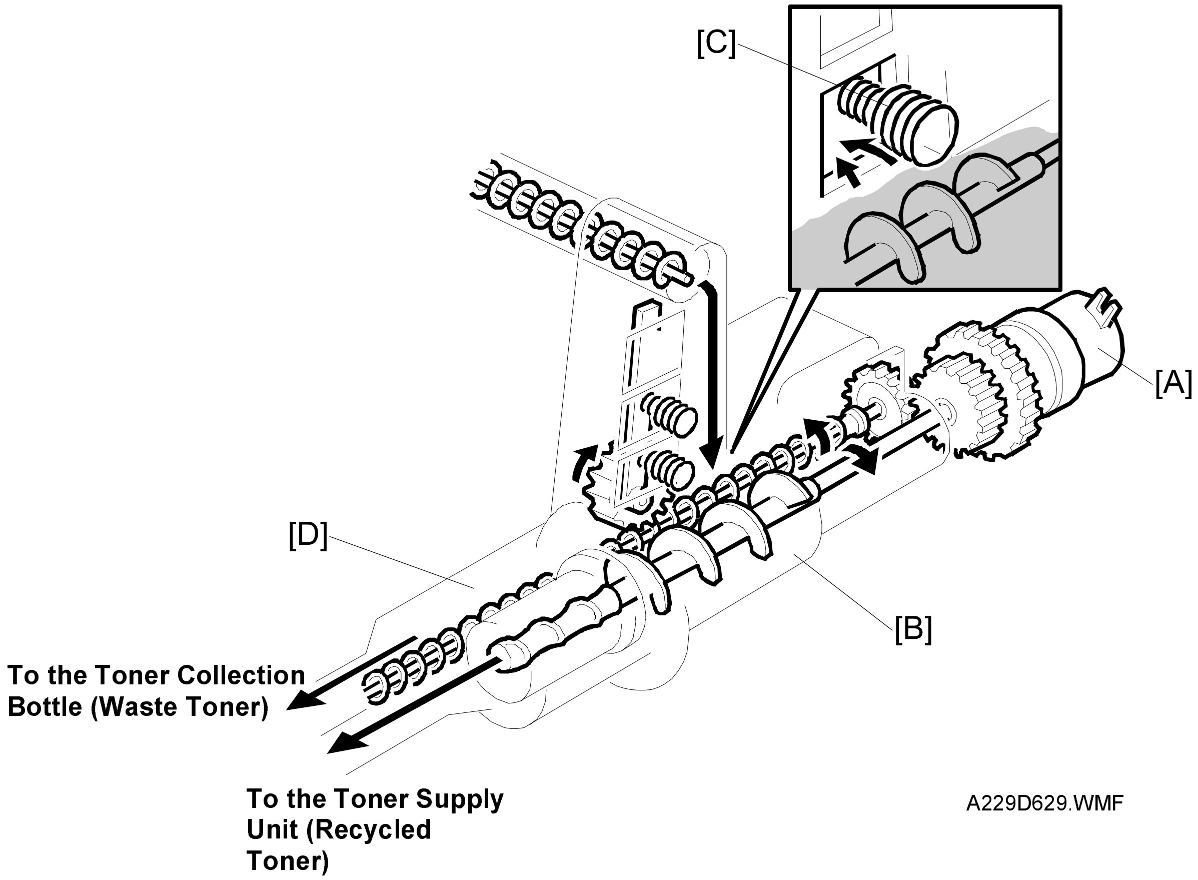
This machine has a toner recycling system, using a screw-pump unit. This mechanism reduces the amount of waste toner by 90%.

Only toner which is transferred from the drum cleaning blade is recycled. Toner collected from the transfer belt cleaning blade is not recycled, but is transported to the toner collection bottle for waste toner through the toner collection tube [A].

The toner recycling unit is driven by the drum motor via timing belts, gears and the toner recycling clutch [B].

The recycled toner from the drum collected by the cleaning coil [C] is dropped on the screw [D] in the toner recycling unit, then transported to the screw-pump [E]. The screw-pump consists of the rotor [F] and the stator [G]. The rotor turns inside the stator, and pushes the recycled toner through the screw-pump as shown. The toner recycling motor [H] drives the air pump [I] This pump blows the toner out of the screw-pump through the toner recycling tube [J] towards the development unit [K].

The toner recycling sensor [L] monitors the rotation of the drive gear. If toner is clogged and the coil cannot move when the motor is switched on, an SC495 is generated.


[C]
[A]
[D]
[B]
To the Toner Collection Bottle (Waste Toner)
To the Toner Supply Unit (Recycled Toner)

A229D629.WMF

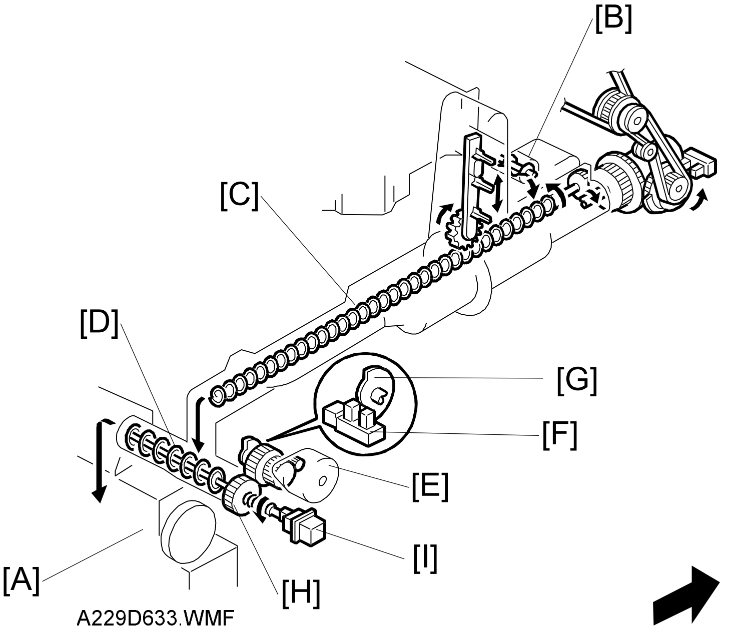
The toner recycling unit mechanism is controlled by the image pixel count. The recycling clutch [A] is engaged for 2 seconds after making the equivalent of about 100 copies of a 6% test chart. The air pump also turns on for 6 seconds at the same interval.

When the recycled toner cannot be transported to the development unit (for example, if the toner recycling clutch is slipping or toner is clogged in the tube or the screw pump), the recycling unit [B] starts to fill up with recycled toner

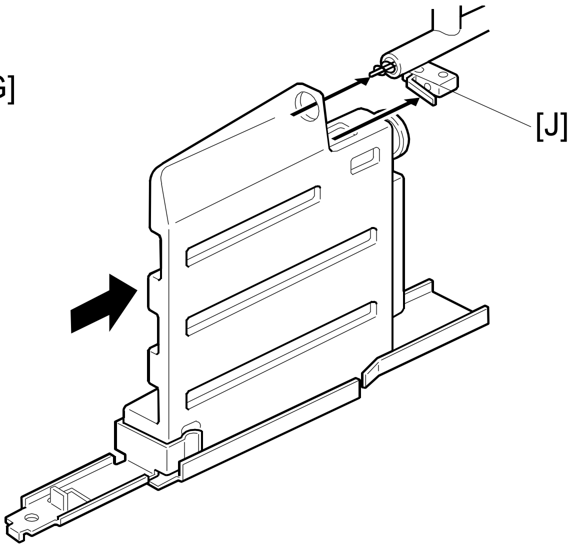
The tower above the recycling unit is divided into two partitions. The right-hand partition contains toner from the drum cleaning unit, and the left-hand partition contains toner from the transfer belt cleaning unit.

The wall between the partitions contains agitators [C] that prevent toner from completely filling the right-hand partition if the recycling mechanism gets clogged with toner. The agitators move sideways, and any toner that is piled too high moves into the toner collection tube [D]. This toner is transported to the toner collection bottle as waste toner.

Waste Toner Collection



A229D633.WMF



A229D634.WMF

Toner collected by the transfer belt unit is transported to the toner collection bottle [A] through the toner collection tube. Three helical coils transport the toner.

One coil [B] feeds the toner in from the transfer belt unit. The next coil [C], driven by the drum motor via drive belts, feeds the toner through the toner collection tube, and the final coil [D], driven by the toner collection motor [E], feeds the toner to the toner collection bottle. This toner is to be disposed of as waste.

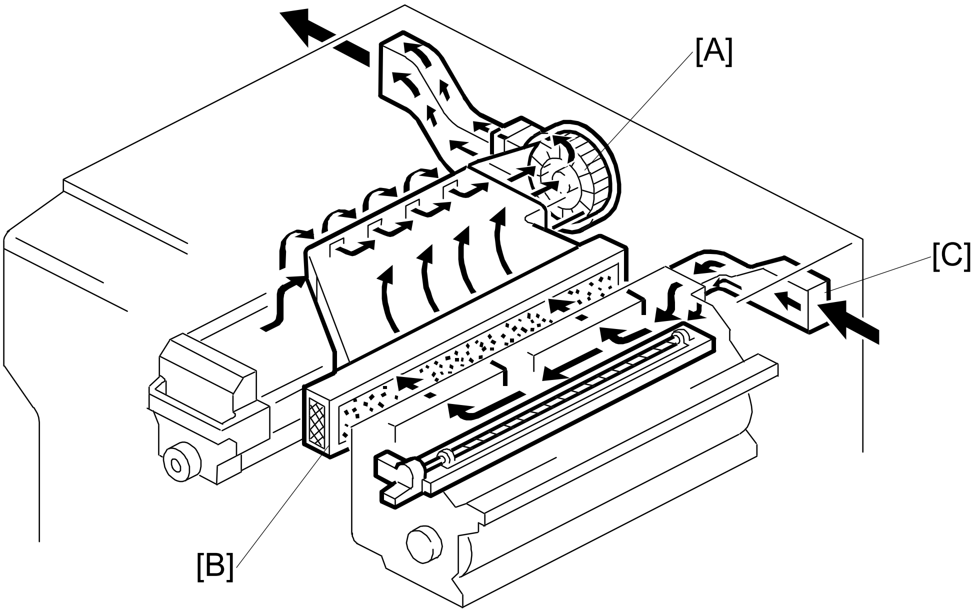
The toner collection motor sensor [F] monitors the rotation of the toner collection coil using the actuator disk [G] to prevent the coil from being damaged by toner clogged in the collection tube.

When the toner collection bottle becomes full, the toner pressure in the bottle increases and presses the gear [H] against the toner overflow switch [I]. After the toner overflow switch is activated, the copy job is allowed to end, or up to 100 continuous copies can be made, then copying is disabled and the service call "full toner collection bottle" is displayed on the LCD.

This condition can be cleared by de-actuating the toner overflow switch while de-actuating then actuating the toner collection bottle switch [J].

2.5.6 OTHERS

Air Flow Around the Drum



A229D565.WMF

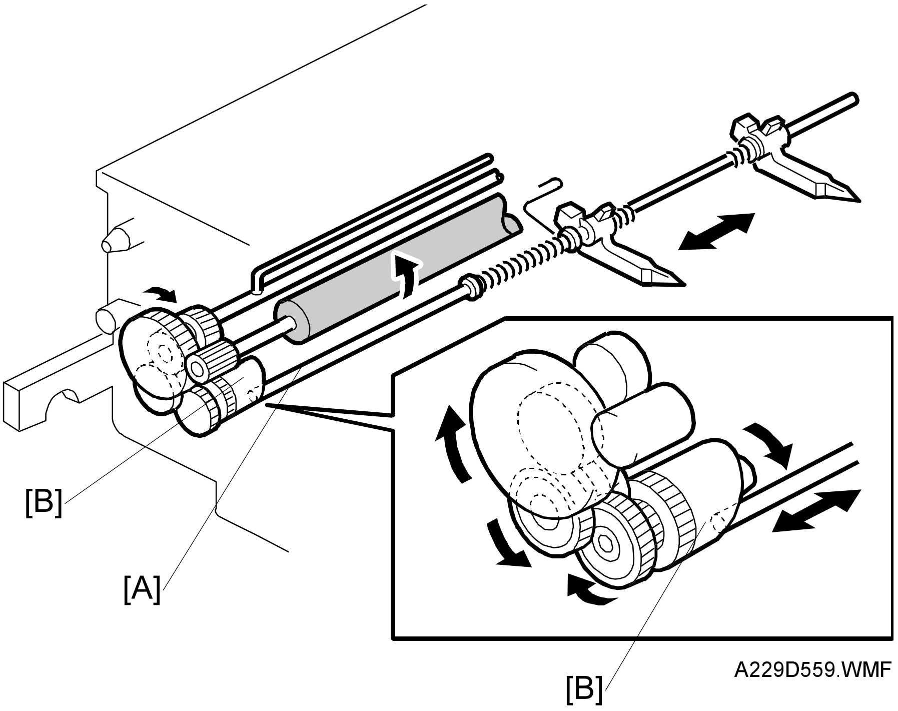
The exhaust fan [A] located above the fusing unit provides air flow to the charge corona unit to prevent uneven build-up of negative ions that can cause uneven drum surface charge.

An ozone filter [B] absorbs the ozone around the drum.

The exhaust fan turns slowly during stand-by and turns quickly during copying to keep the temperature inside the machine constant.

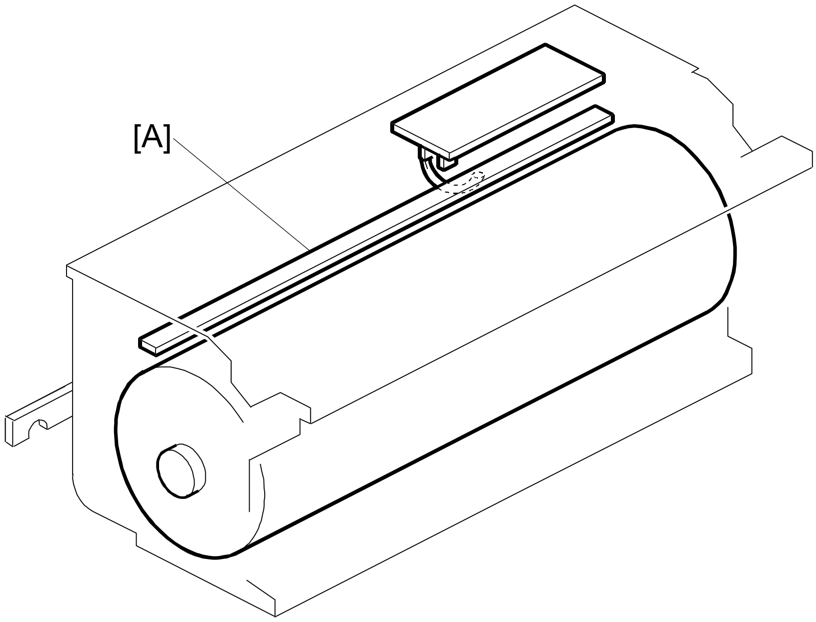
To prevent foreign matter from entering the copier inside, there is a dust protection filter in the entrance [C] of the duct.

Pick-off Mechanism



The pick-off pawls are always in contact with the drum surface as a result of weak spring pressure. They move from side to side during the copy cycle to prevent drum wear at any particular location. This movement is made via a shaft [A] and an a cam [B].

Quenching



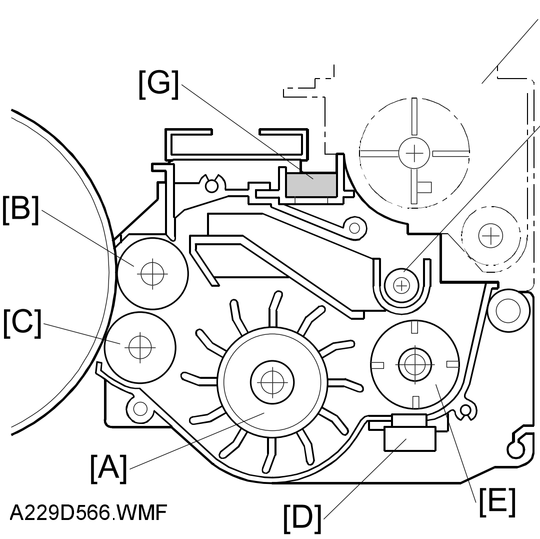
A229D556.WMF

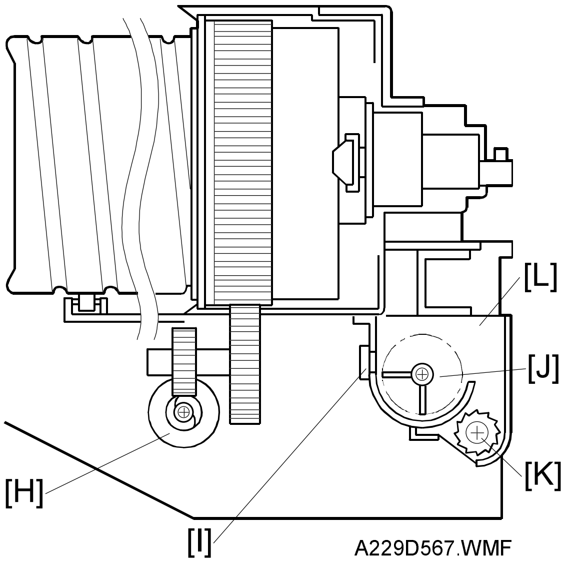
In preparation for the next copy cycle, light from the quenching lamp [A] neutralizes any charge remaining on the drum.

The quenching lamp consists of a line of 16 red LEDs extending across the full width of the drum.

2.6 DEVELOPMENT AND TONER SUPPLY

2.6.1 OVERVIEW





- Paddle Roller [A]
- Upper Development Roller [B]
- Lower Development Roller [C]
- Toner Density Sensor [D]
- Developer Agitator [E]
- Toner Auger [F]
- Development Filter [G]
- Toner Supply Motor [H]
- Toner End Sensor [I]
- Toner Agitator [J]
- Toner Supply Roller [K]
- Toner Hopper [L]

This copier uses a double roller development (DRD) system. Each roller has a diameter of 20 mm.

This system differs from single roller development systems in that:

(1) It develops the image in a narrower area

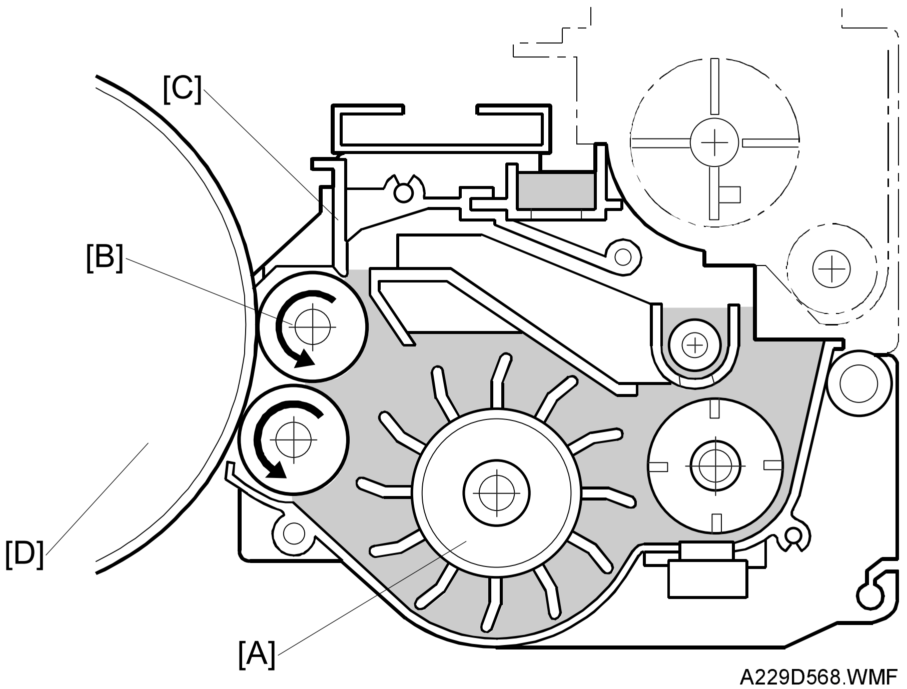
(2) It develops the image twice

(3) The relative speed of each development roller against the drum is reduced.

Also, this machine uses fine toner (about 7.5 μm) and developer (about 70 μm). Both the DRD system and new consumables improve the image quality, especially of thin horizontal lines, the trailing edges of the half-tone areas, and black cross points.

The machine contains a toner recycling system. The recycled toner is carried to the toner hopper [L] by the toner recycling motor and mixed with new toner by the toner agitator [J]. (The toner recycling system is described in the “Drum Cleaning And Toner Recycling section”.)

2.6.2 DEVELOPMENT MECHANISM



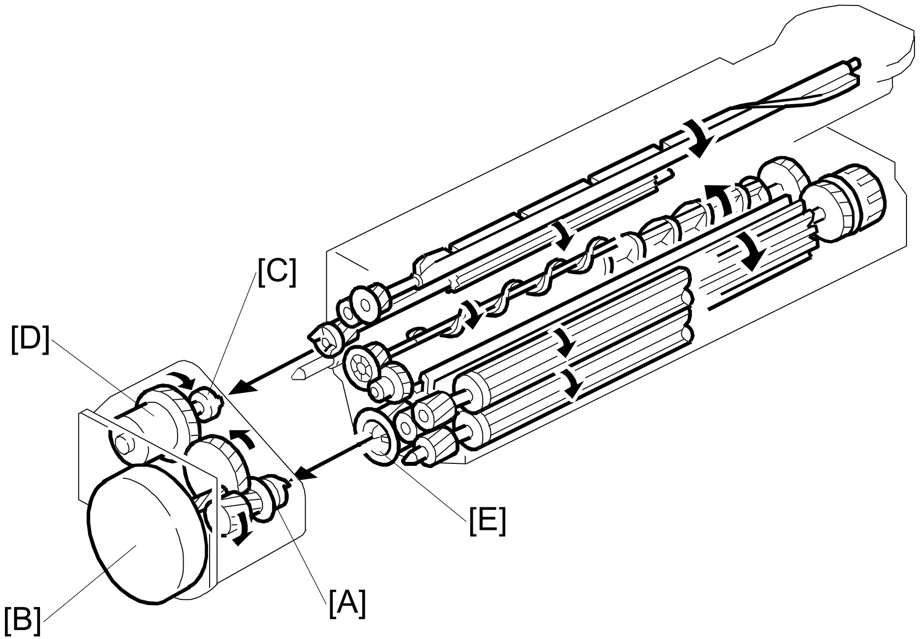
The paddle roller [A] picks up developer and transports it to the upper development roller [B]. Internal permanent magnets in the development rollers attract the developer to the development roller sleeve. The upper development roller carries the developer past the doctor blade [C]. The doctor blade trims the developer to the desired thickness and creates backspill to the cross mixing mechanism.

In this machine, black areas of the latent image are at a low negative charge (about –150 V) and white areas are at a high negative charge (about –950 V).

The development roller is given a negative bias to attract negatively charged toner to the black areas of the latent image on the drum.

The development rollers continue to turn, carrying the developer to the drum [D]. When the developer brush contacts the drum surface, the low-negatively charged areas of the drum surface attract and hold the negatively charged toner. In this way, the latent image is developed.

2.6.3 DRIVE MECHANISM



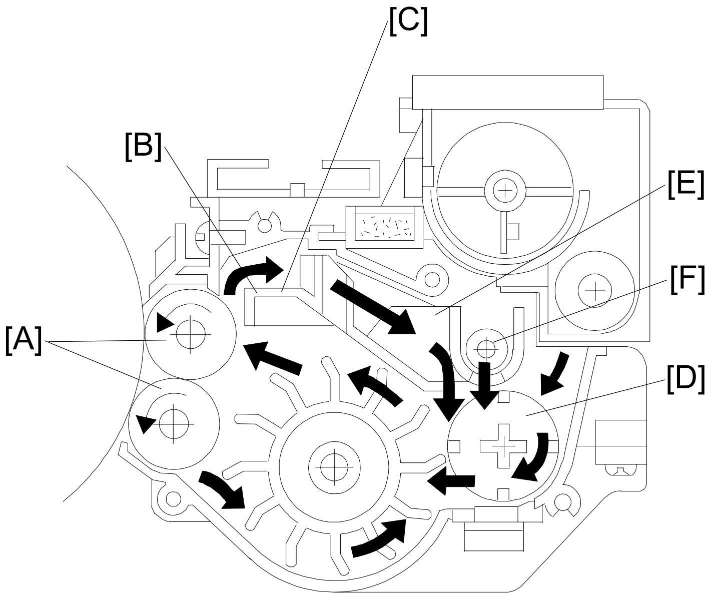
A229D569.WMF

The gears of the development unit are driven by the development drive gear [A] when the development motor [B] (a dc servomotor) turns.

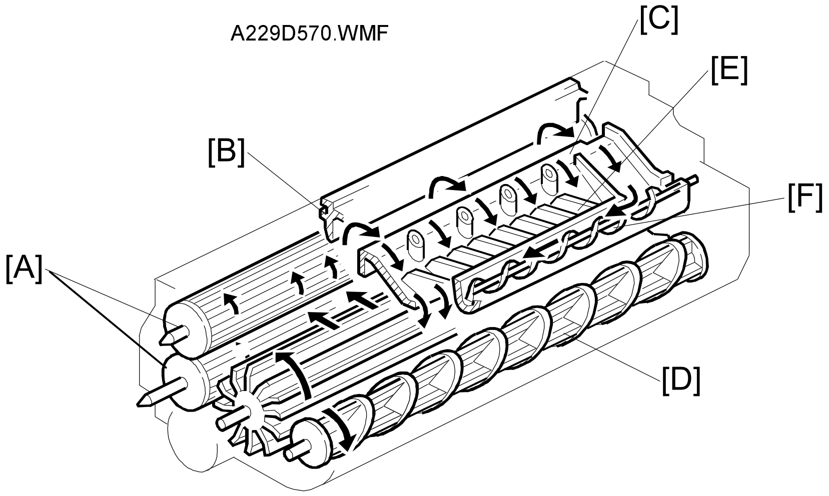
The gears of the toner hopper are driven by the toner supply roller drive gear [C] when the toner supply clutch [D] activates.

The above gears are helical gears. Helical gears are more quiet than normal gears. The teeth of the development drive gear are chamfered so that they smoothly engage the development roller gear [E] when the unit is installed.

2.6.4 CROSSMIXING



A229D570.WMF



A229D571.WMF

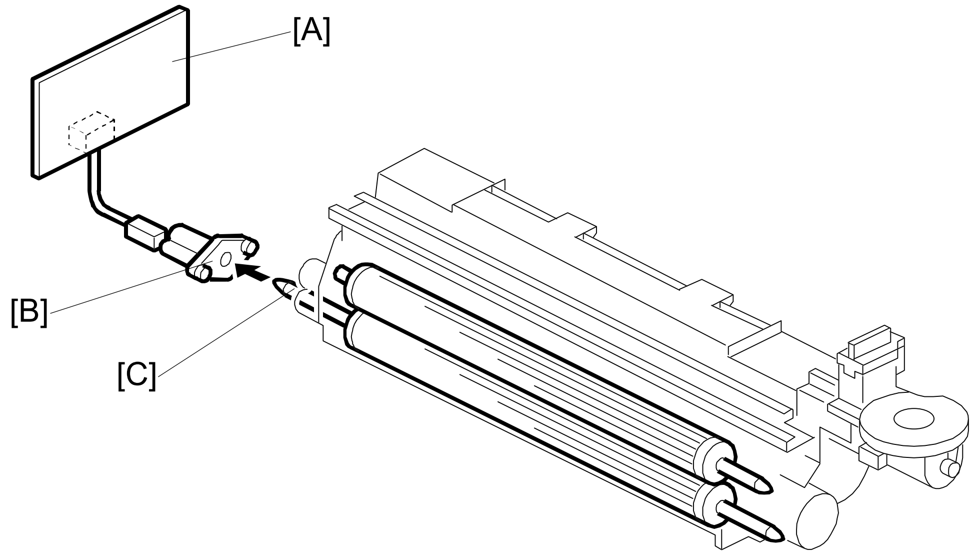
This copier uses a standard cross-mixing mechanism to keep the toner and developer evenly mixed. It also helps agitate the developer to prevent developer clumps from forming and helps create the triboelectric charge.

The developer on the turning development rollers [A] is split into two parts by the doctor blade [B]. The part that stays on the development rollers forms the magnetic brush and develops the latent image on the drum. The part that is trimmed off by the doctor blade goes to the backspill plate [C].

As the developer slides down the backspill plate to the agitator [D], the mixing vanes [E] move it slightly toward the rear of the unit. Part of the developer falls into the auger inlet and is transported to the front of the unit by the auger [F].

The agitator moves the developer slightly to the front as it turns, so the developer stays level in the development unit.

2.6.5 DEVELOPMENT BIAS



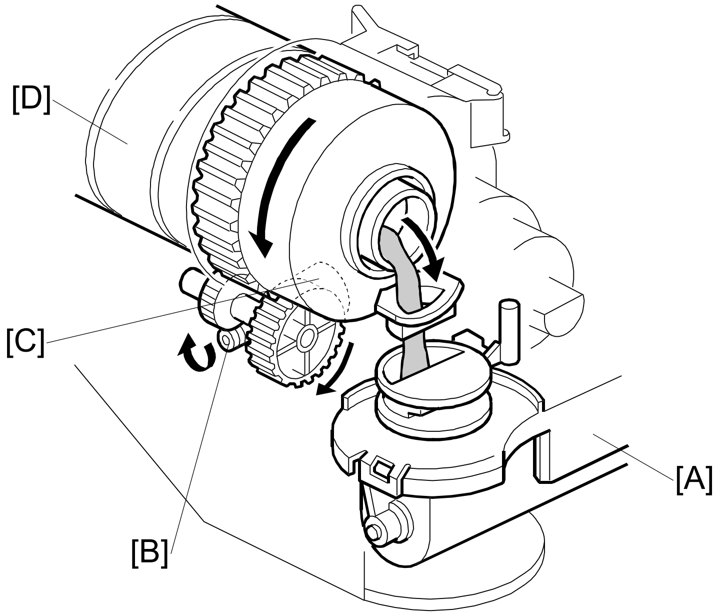
A229D572.WMF

To attract negatively charged toner to the black areas of the latent image on the drum, the development power pack [A] applies the negative development bias to the lower sleeve roller through the receptacle [B] and the lower sleeve roller shaft [C]. Then the bias is applied to the upper sleeve roller and the lower casing through the rear sleeve roller holder, which is made of conductive resin.

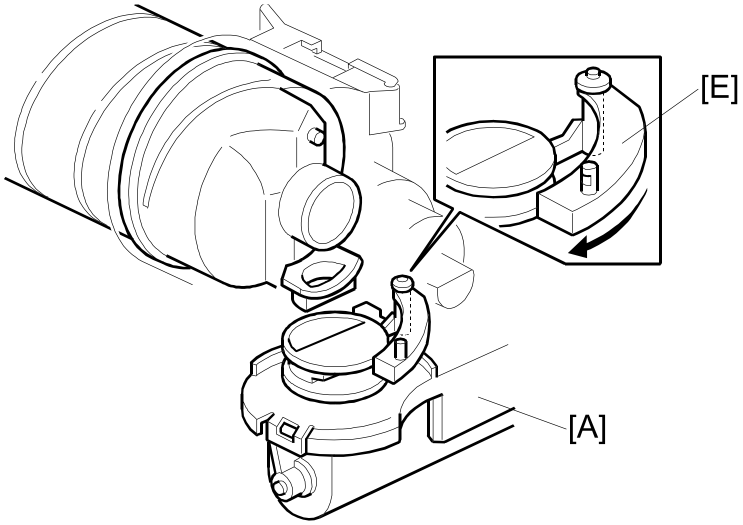
The bias applied to the lower casing prevents toner from being attracted back from the drum.

2.6.6 TONER SUPPLY

Toner Bottle Mechanism



A229D575.WMF

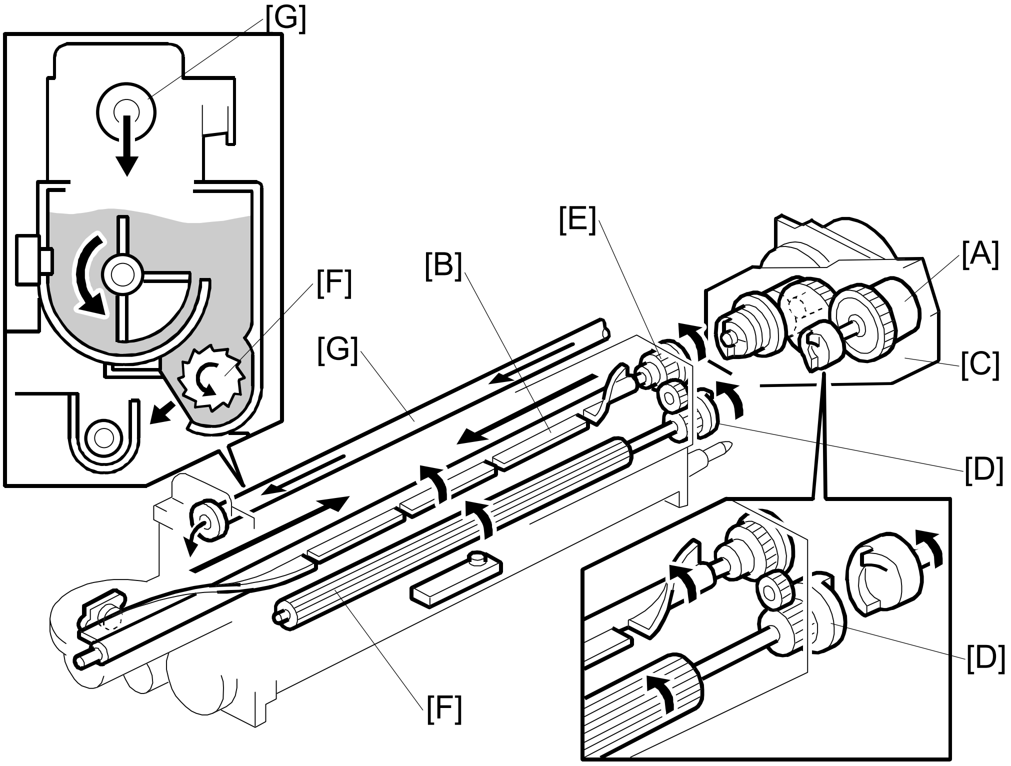


A229D576.WMF

The bottle drive mechanism transports toner from the bottle to the toner supply unit [A]. A worm gear [B] on the toner supply motor [C] drives this mechanism. The toner bottle [D] has a spiral groove that helps move toner to the supply unit.

When the toner bottle holder is opened, the shutter hook [E] moves the toner shutter, which shuts the opening of the toner supply unit and prevents the toner in the toner holder from spilling out.

Toner Supply Mechanism

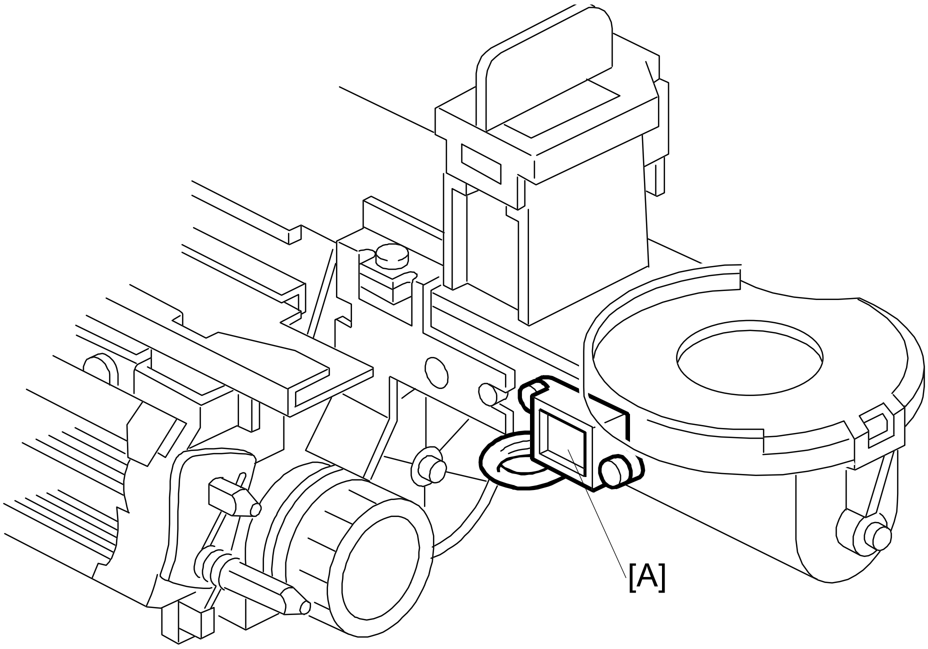


A229D573.WMF

When the toner supply clutch [A] turns on, the agitator [B] mixes the recycled toner transported by the air tube [G] with new toner. Then it moves the toner from front to rear and sends it to the toner supply roller.

The toner supply clutch [A] inside the development motor unit [C] transfers drive from the development motor to the toner supply roller gear [D], which drives the agitator gear [E]. Toner is caught in the grooves in the toner supply roller [F]. Then, as the grooves turn past the opening, the toner falls into the development unit.

Toner End Detection



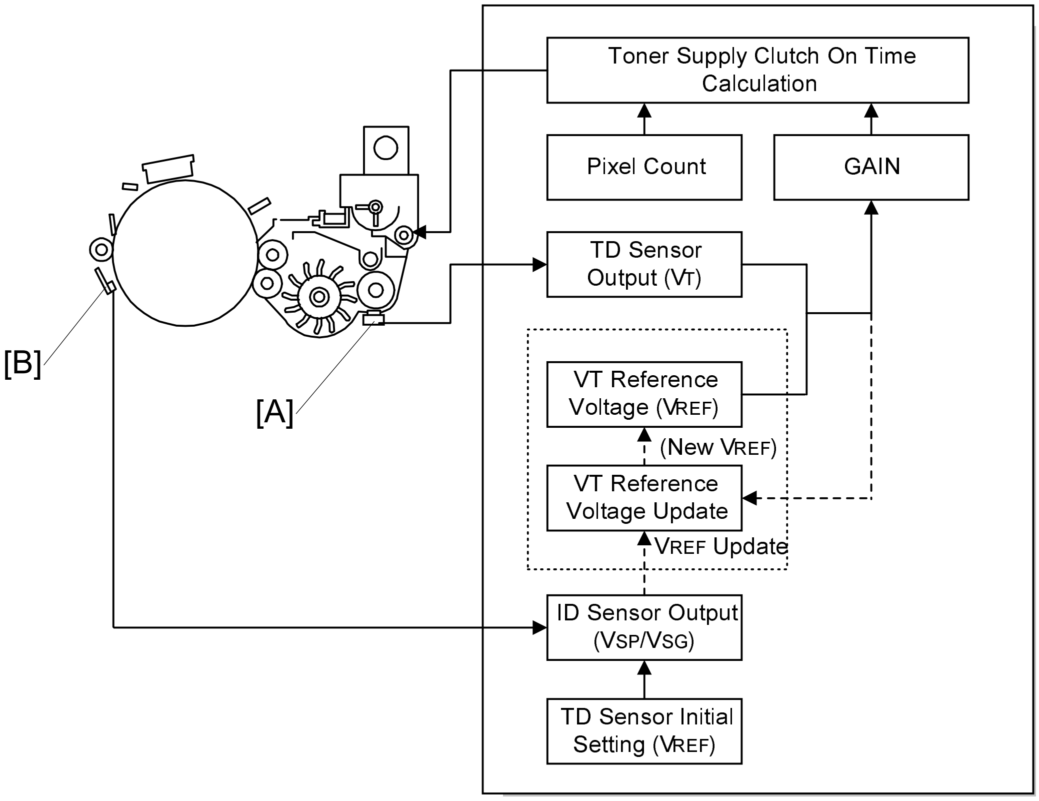
A229D574.WMF

The toner end sensor [A] detects whether sufficient toner remains in the toner hopper or not. The toner end sensor checks for a toner end condition once when the toner supply clutch turns on. When there is only a small amount of toner inside the toner hopper and pressure on the toner end sensor becomes low, the toner end sensor outputs a pulse signal (once per copy).

2.6.7 TONER DENSITY CONTROL

Overview

There are two modes for controlling toner supply: sensor control mode and image pixel count control mode. The mode can be changed with SP2-208. The factory setting is sensor control mode. Image pixel count mode should only be used if the TD or ID sensor is defective.


Toner Supply Clutch On Time Calculation
Pixel Count
GAIN
TD Sensor Output (VT)
VT Reference Voltage (VREF)
(New VREF)
VT Reference Voltage Update
VREF Update
ID Sensor Output (VSP/VSG)
TD Sensor Initial Setting (VREF)
[B]
[A]

A229D644.WMF

Sensor control mode

In sensor control mode, the machine varies toner supply for each copy to maintain the correct proportion of toner in the developer and to account for changes in drum reflectivity over time. The adjustment depends on two factors.

- The amount of toner required to print the page (based on the black pixel amount for the page)
- Readings from the TD sensor [A] and ID sensor [B].

Toner density sensor initial setting

When the new developer is installed, TD sensor initial setting must be done using SP2-801. This sets the sensor output to 2.5V. This value will be used as the TD sensor reference voltage (VREF).

VSP and VSG detection

The ID sensor detects the following voltages.

- VSG: The ID sensor output when checking the drum surface
- VSP: The ID sensor output when checking the ID sensor pattern

In this way, the reflectivity of both the drum and the pattern on the drum are checked.

The ID sensor pattern is made on the drum with the charge corona and laser diode.

VSP/VSG is detected every 50 copies (or at the end of a copy job of more than 50 pages) to update the TD sensor reference voltage (VREF). This interval can be changed using SP2-210. This compensates for any variations in the reflectivity of the pattern on the drum or the reflectivity of the drum surface.

VREF Update

VREF is updated using VSP/VSG and VT. This is done every 50 copies (or at the end of a copy job of more than 50 pages), and during process control initial setting. See "VREF Update" in the Process Control section for details.

VT detection

The toner density in the developer is detected once every copy cycle after the trailing edge of the image passes through the development roller.

Image pixel count

For each copy, the CPU adds up the image data value of each pixel and converts the sum to a value between 0 and 255. (The value would be 255 if the page was completely black.)

Gain Determination

GAIN is another factor in the toner supply clutch on time calculation. Its value can be 0, 1, 2, 3, or 4. It is calculated every copy using "VREF – VT".

Toner Supply Clutch On Time Calculation

The toner supply clutch on time for each copy is decided using the following formula: (GAIN × Image pixel count × 0.7mg/cm^2 /Toner Supply Rate) + 50ms

The toner supply rate can be changed using SP2-209.

Image pixel count control

This mode should only be use as a temporary countermeasure while waiting for replacement parts, such as a TD sensor. This mode controls the toner supply using the same formula for the toner supply clutch on time. However, the GAIN value is fixed at 0.7.

2.6.8 TONER END DETECTION

Toner near end and toner end are detected every copy using the toner end sensor and toner supply motor as follows.

Toner Near End

When the toner end sensor is on for two consecutive pages, the toner supply motor turns on for 1.1s. If the toner supply motor has turned on more than 30 times during the last 100 prints, “Toner Near End” is displayed.

The “Toner Near End” condition is cleared if the toner end sensor turns off.

Toner End

If the toner end sensor has been continuously on for 200 copies (toner end sensor copy counter), “Toner End” is displayed.

If the toner end sensor is off twice consecutively, the toner end sensor copy counter is reset to 0.

2.6.9 TONER END RECOVERY

If the front door is opened and closed while a toner near end or toner end condition exists, the machine will attempt to recover using measurements from the TD sensor.

At this time, the drum and development motor, charge and development bias turn on.

The toner supply motor turns on for 1.1s, then the toner supply clutch turns on for 1s. Then the CPU checks the toner end sensor output.

If the toner end sensor is off (meaning that there is toner in the toner hopper), the CPU compares VT and VREF.

If VT is less than or equal to VREF (meaning that there is enough toner in the development unit), the CPU waits for 20s to mix the toner in the developer evenly. Then the above components turn off, and the toner end or toner near end is cleared.

If VT is more than VREF, the CPU turns on the toner supply clutch for 1s again until VT becomes less than or equal to VREF.

If the toner end sensor output remains on even after trying the above procedure 7 times, the components turn off and “Toner End” remains on.

2.6.10 ABNORMAL TD SENSOR CONDITIONS

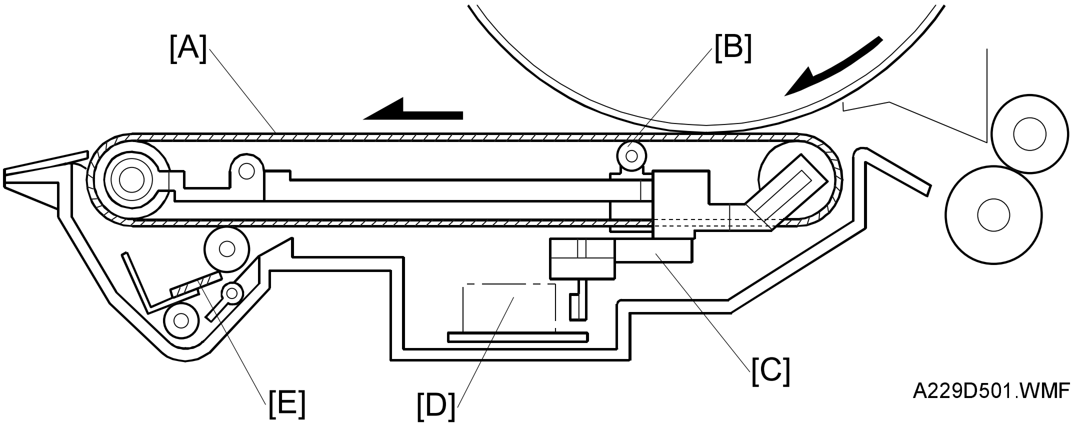
The TD sensor is checked every copy. If the reading from the TD sensor becomes abnormal during a copy job, the machine holds the GAIN factor constant to allow toner supply to vary with only the pixel count for the rest of the copy job. Then at the end of the job, an SC code is generated and the machine must be repaired.

If there are no spare ID or TD sensors, the toner supply mode can be set to image pixel count mode using SP 2-208-1.

Details of how the machine determines an abnormal sensor detection are listed in section 7 (Troubleshooting - SC390).

2.7 IMAGE TRANSFER AND PAPER SEPARATION

2.7.1 OVERVIEW



This model uses a transfer belt unit consists of the following parts:

[A] Transfer belt
A belt (length: 321 mm) with high electrical resistance which holds a high positive electrical potential to attract toner from the drum to the paper. Also, the electrical potential attracts the paper itself and helps the paper to separate from the drum.

[B] Transfer bias roller
Applies transfer voltage to the transfer belt.

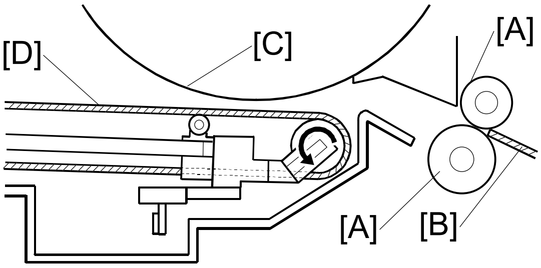
[C] Transfer belt lift lever (driven by a solenoid)
Lifts the transfer belt into contact with the drum.

[D] Transfer power pack
Generates a constant transfer current.

[E] Cleaning roller and cleaning roller cleaning blade
Removes toner remaining on the transfer belt to prevent the rear side of the paper from getting dirty

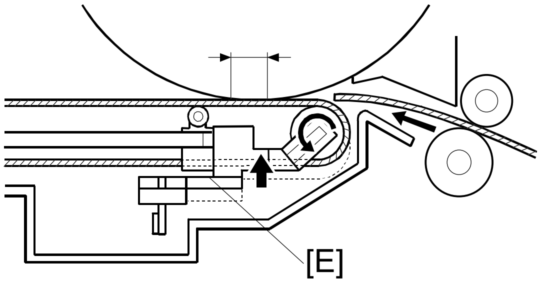
2.7.2 IMAGE TRANSFER AND PAPER SEPARATION MECHANISM

The registration rollers [A] feed the paper [B] to the gap between the drum [C] and the transfer belt [D].



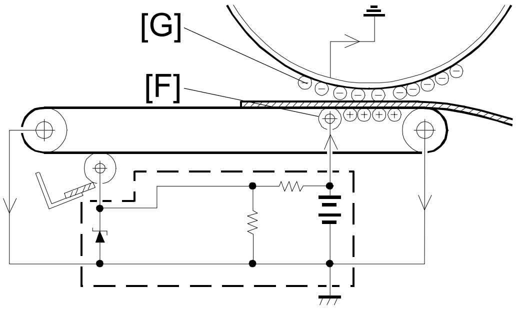
A229D507.WMF

As soon as the leading edge of the paper reaches the gap between the transfer belt and the drum, the transfer belt lift lever [E] raises the transfer belt into contact with the drum. The lift lever is driven by a solenoid



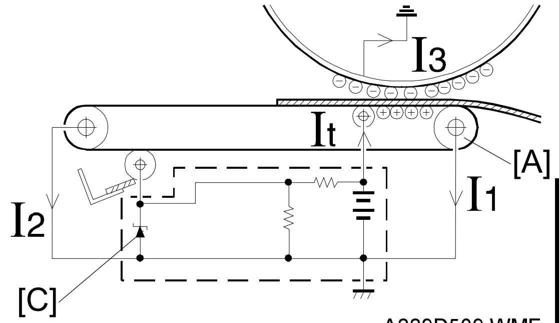
A229D508.WMF

Then a positive charge is applied to the transfer bias roller [F] to attract the negatively charged toner [G] from the drum. It also attracts the paper and separates it from the drum



A229D648.WMF

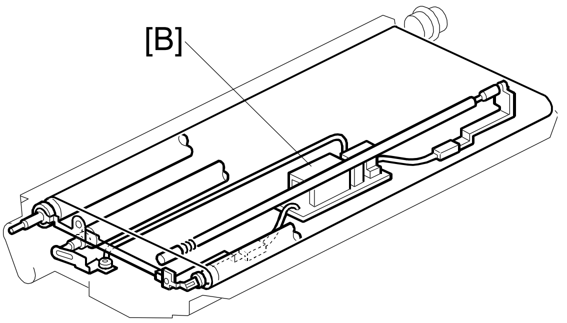
After the image transfer is completed, the charge on the transfer belt holds the paper to the transfer belt. After separating the paper from the transfer belt, the transfer belt is discharged by the transfer belt drive roller [A].



A229D509.WMF

The transfer power pack [B] inside the transfer belt unit monitors the current (I_1 and I_2) fed back from the drive rollers at each end of the transfer belt to adjust the transfer current.

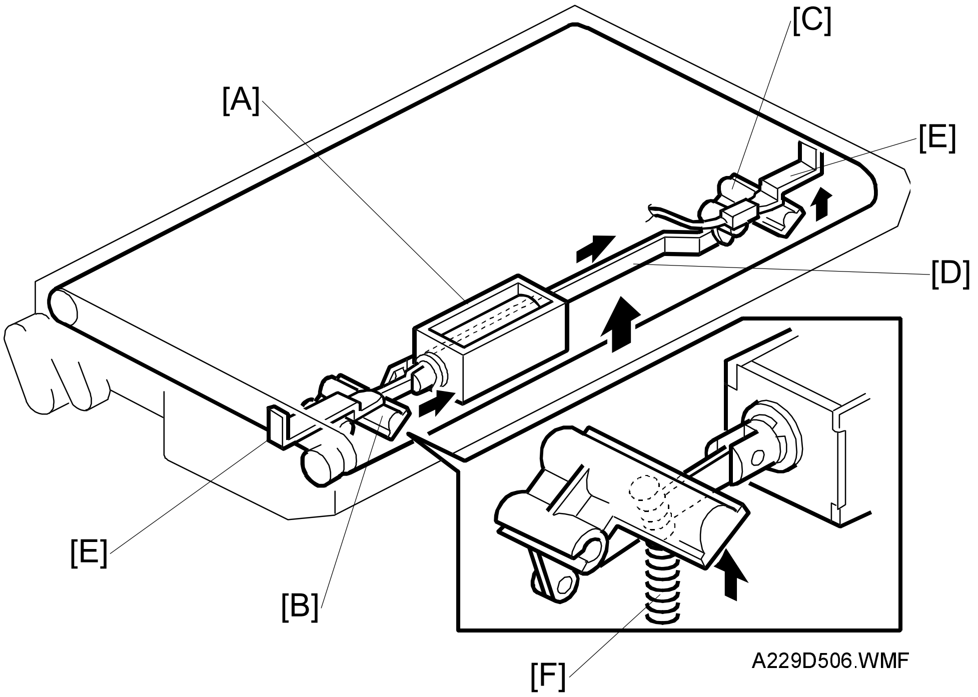
Then, the power pack adjusts I_t to keep the current through the drum (I_3) constant, even if the paper, environmental conditions, or transfer belt surface resistance change.



A229D503.WMF

The varistor [C] keeps the voltage at the cleaning bias roller [D] constant if there are fluctuations.

2.7.3 TRANSFER BELT UNIT LIFT MECHANISM



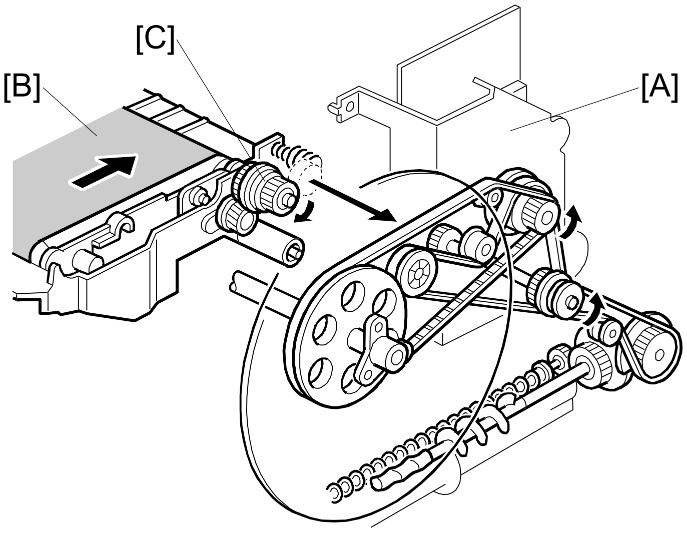
The transfer belt lift solenoid [A] inside the transfer belt unit turns on to raise the transfer belt into contact with the drum. The front lever [B] and the rear lever [C] are connected to the solenoid by links [D], and they push up the stays [E] when the solenoid turns on.

The support spring [F] helps the solenoid to raise the transfer belt.

The solenoid turns off after the copy job is finished. The transfer belt must be released from the drum for the following reasons:

1. To prevent the ID sensor pattern on the drum from being rubbed off by the transfer belt, because the transfer belt is located between the development unit and the ID sensor.
2. To decrease the load on the bias roller cleaning blade, it is better to prevent toner on non-image areas (for example V_D, V_H, ID sensor patterns developed during process control data initial setting) from being transferred onto the transfer belt.
3. To prevent drum characteristics from being changed by coming into contact with material of the rubber belt.

2.7.4 PAPER TRANSPORTATION AND BELT DRIVE MECHANISM

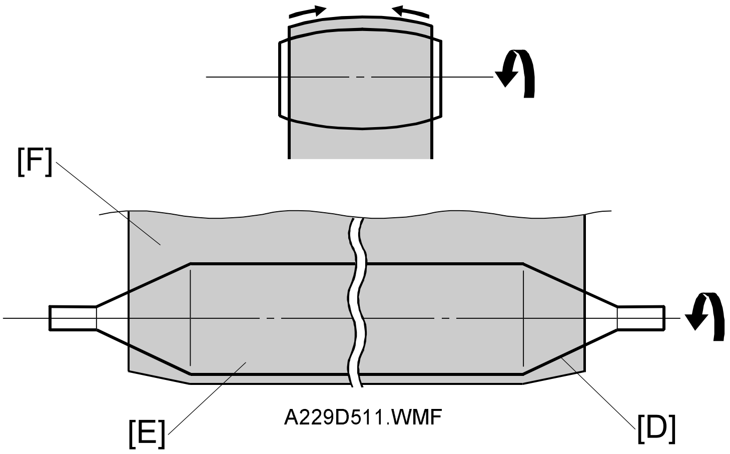


A229D502.WMF

The transfer belt is driven by the drum motor [A] through belts and gears.
Since the transfer belt electrically attracts the paper [B], a transport fan is not required.

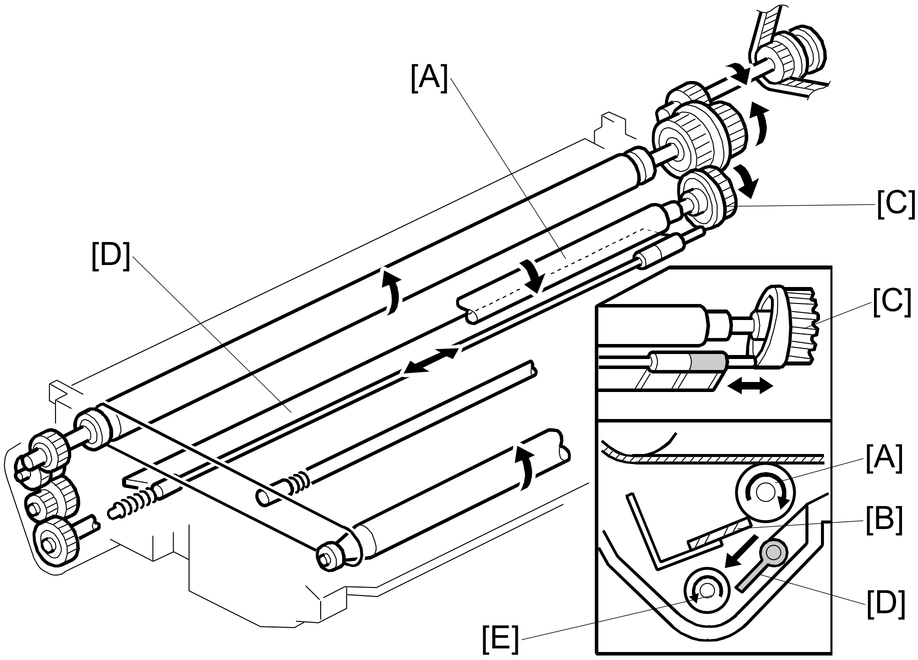
At the turn in the transfer belt, the belt is discharged by the transfer belt drive roller [C] to reduce paper attraction, and the paper separates from the belt as a result of its own stiffness.

The tapered parts [D] at both sides of the roller [E] help keep the transfer belt [F] in the center, so that it does not run off the rollers.



A229D511.WMF

2.7.5 TRANSFER BELT CLEANING MECHANISM



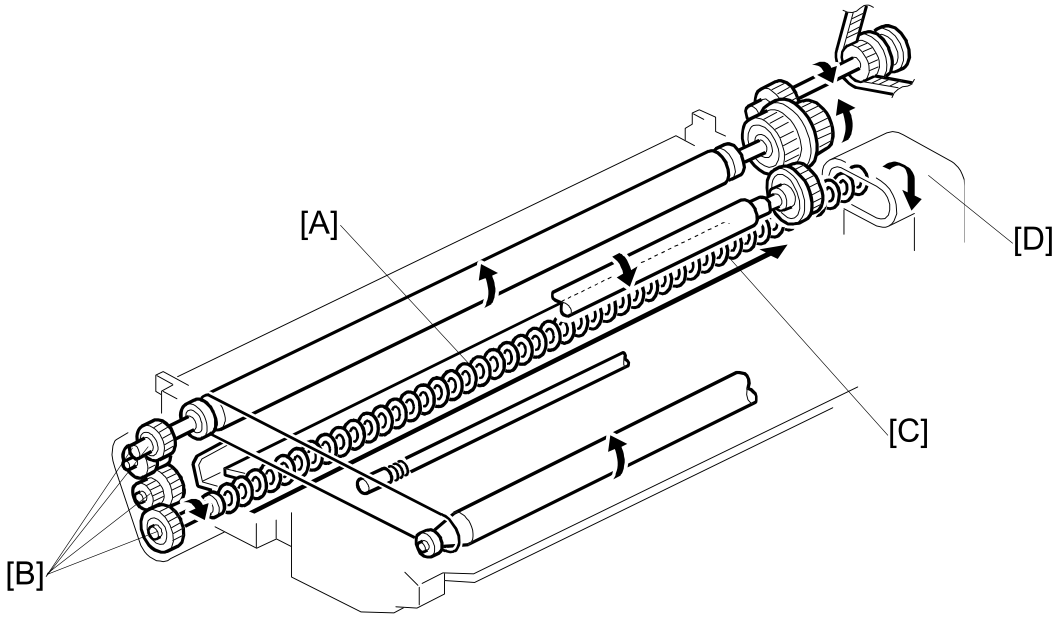
A229D504.WMF

Some toner may adhere to the transfer belt when paper jams occur, or when the by-pass feed table side fences are set in the wrong position. The adhered toner must be removed to prevent the rear side of the copy paper from getting dirty.

The cleaning roller [A] is always in contact with the transfer belt. It collects toner and paper dust adhering to the surface of the transfer belt. This is because a positive bias is applied to the cleaning roller and this attracts the negatively charged toner on the transfer belt.

A counter blade system cleans the cleaning roller. The cleaning blade [B] scrapes off toner collecting on the cleaning roller [A]. The gear [C] moves the agitator plate [D] from side to side to transport toner to the toner collection coil [E]. Toner cleaned off the transfer belt is transported to the waste toner collection bottle by the coil.

2.7.6 TONER COLLECTION MECHANISM

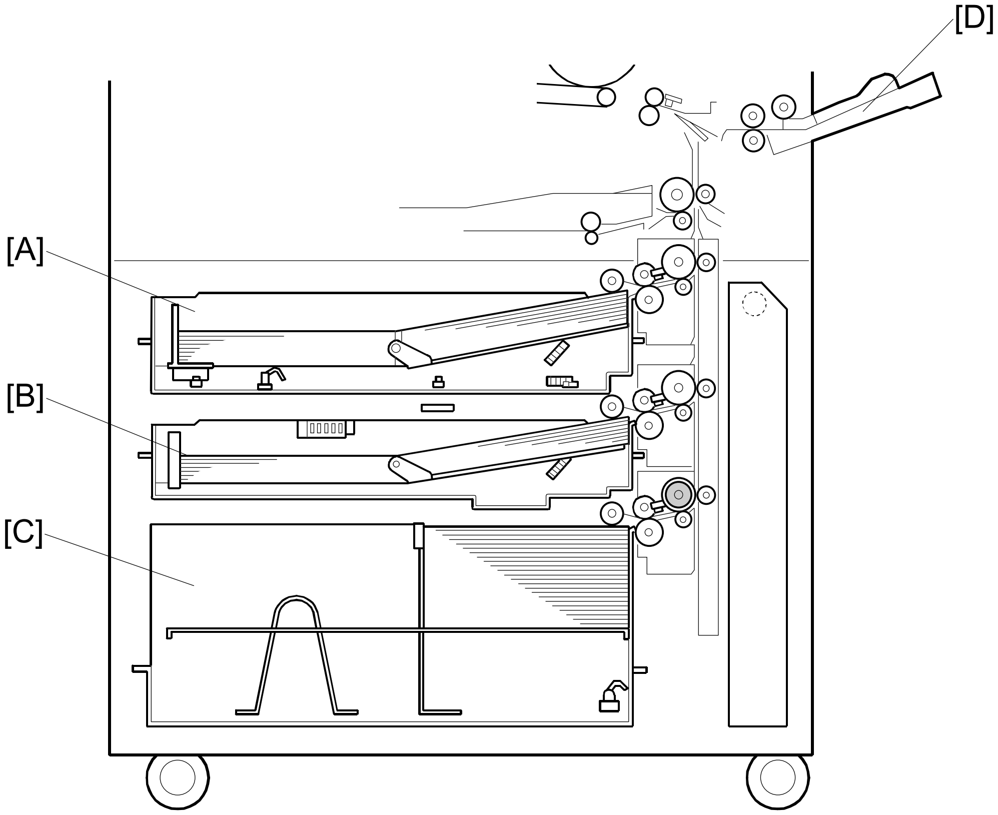


A229D505.WMF

Transfer belt drive is transmitted to the toner collection coil [A] through idle gears [B]. The toner collection coil [C] transports the collected toner to the toner recycling unit [D] and from there it goes to the waste toner collection bottle. See Drum Cleaning and Toner Recycling for details.

2.8 PAPER FEED

2.8.1 OVERVIEW



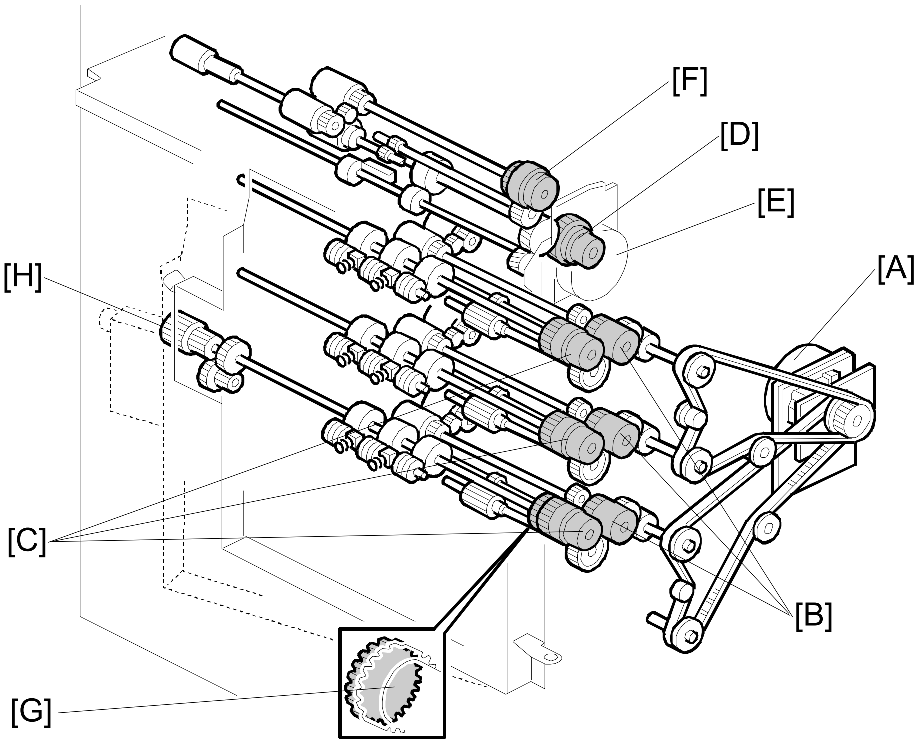
A229D615.WMF

This model has three built-in paper feed trays: tandem feed tray [A] (500 + 500 sheets), universal tray [B] (550 sheets) and built-in LCT [C] (1500 sheets).

Paper can also be fed using the by-pass feed table [D] which has an independent feed mechanism. The by-pass feed table can hold 50 sheets of paper.

All feed stations use an FRR feed system.

2.8.2 DRIVE MECHANISM



A22916.WMF

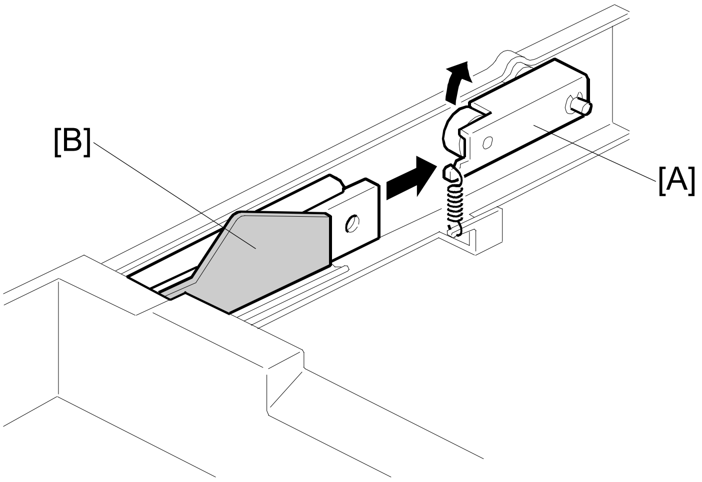
[A]	Paper Feed Motor
[B]	Paper Feed Clutches 1 to 3
[C]	Vertical Relay Clutches 1 to 3
[D]	Relay Clutch
[E]	By-pass Feed Motor
[F]	By-pass Feed Clutch

The paper feed motor [A] drives feed, pick-up, and separation rollers in trays 1, 2, and 3 via timing belts, clutches [B], and gears. The paper feed motor also drives the vertical transport rollers and the relay roller. Drive is transferred to each of the three vertical transport rollers by a vertical relay clutch [C], and to the relay roller by the relay clutch [D].

The by-pass feed motor [E] drives all the rollers in the by-pass tray via gears and a clutch [F].

The third vertical relay clutch has a one-way-gear [G]. This prevents the clutch from slipping when the knob [H] is turned to remove jammed paper in the paper feed tray and vertical transport area.

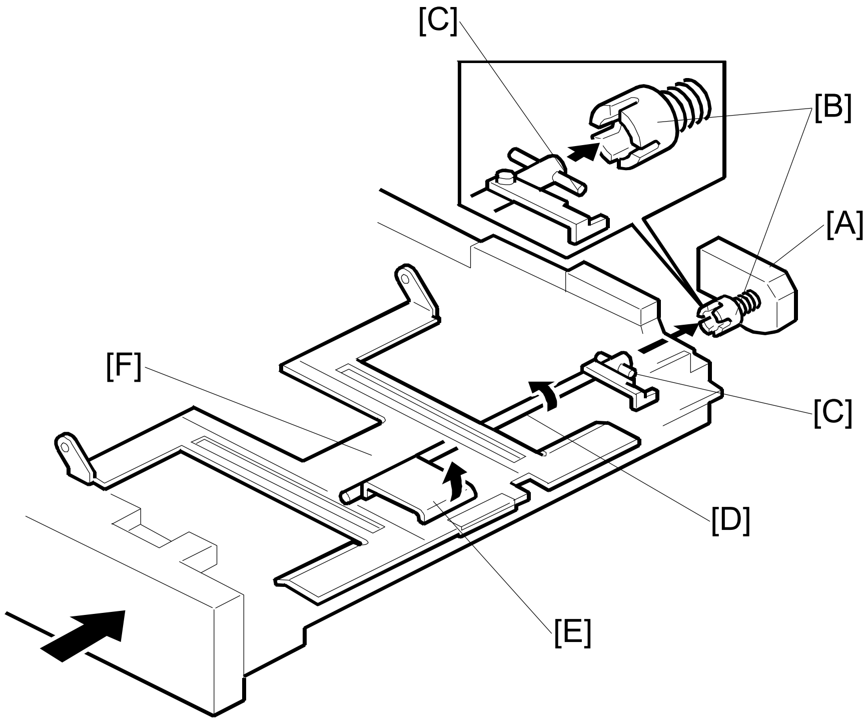
2.8.3 TRAY POSITIONING MECHANISM – TRAYS 1 AND 2



A229D618.WMF

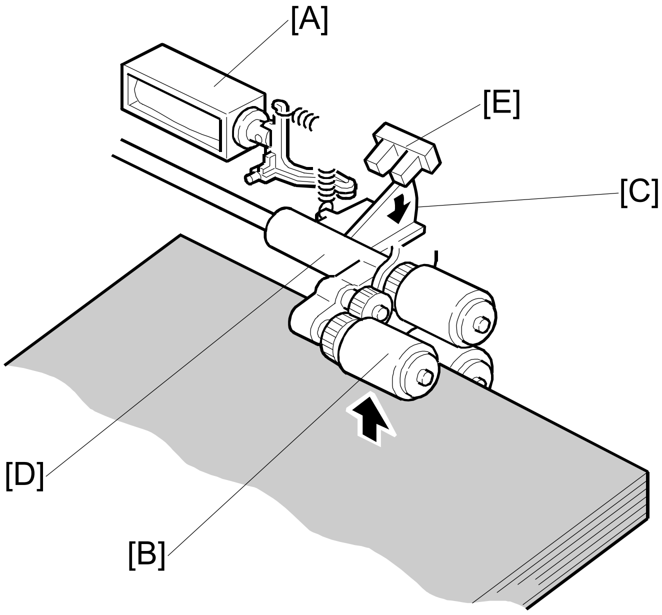
When the tray is placed in the paper feed unit, the lock lever [A] drops behind the lock plate [B] on the support bracket to lock the tray in the proper position.

2.8.4 PAPER LIFT MECHANISM - TRAYS 1 AND 2

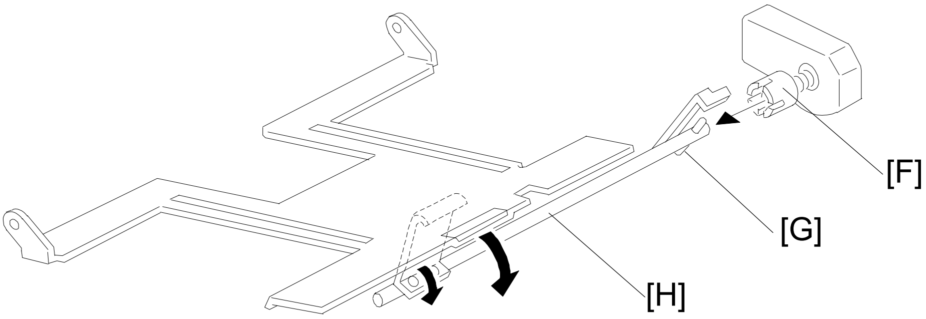


A229D604.WMF

When the machine detects that the paper tray has been placed in the machine, the lift motor [A] turns on. The coupling gear [B] on the tray lift motor engages the pin [C] on the lift arm shaft [D], then it turns the tray lift arm [E] to lift the tray bottom plate [F].



A229D605.WMF



A229D606.WMF

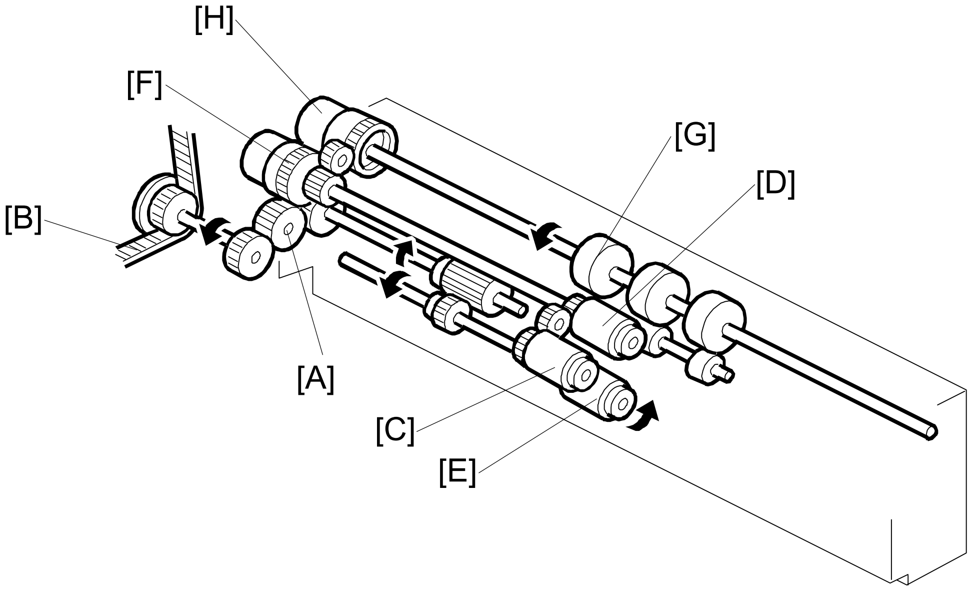
When the lift motor turns on, the pick-up solenoid [A] activates to lower the pick-up roller [B]. When the top sheet of paper reaches the proper paper feed level, the paper pushes up the pick-up roller and the actuator [C] on the pick-up roller supporter [D] activates the lift sensor [E] to stop the lift motor.

After several paper feeds, the paper level gradually lowers and the lift sensor is de-activated. Then the lift motor turns on again until the lift sensor is activated again.

When the tray is drawn out of the feed unit, the lift motor coupling gear [F] disengages the pin [G] of the lift arm shaft [H], then the tray bottom plate [I] drops under its own weight.

2.8.5 PICK-UP AND FEED MECHANISM – TRAYS 1 TO 3

Overview



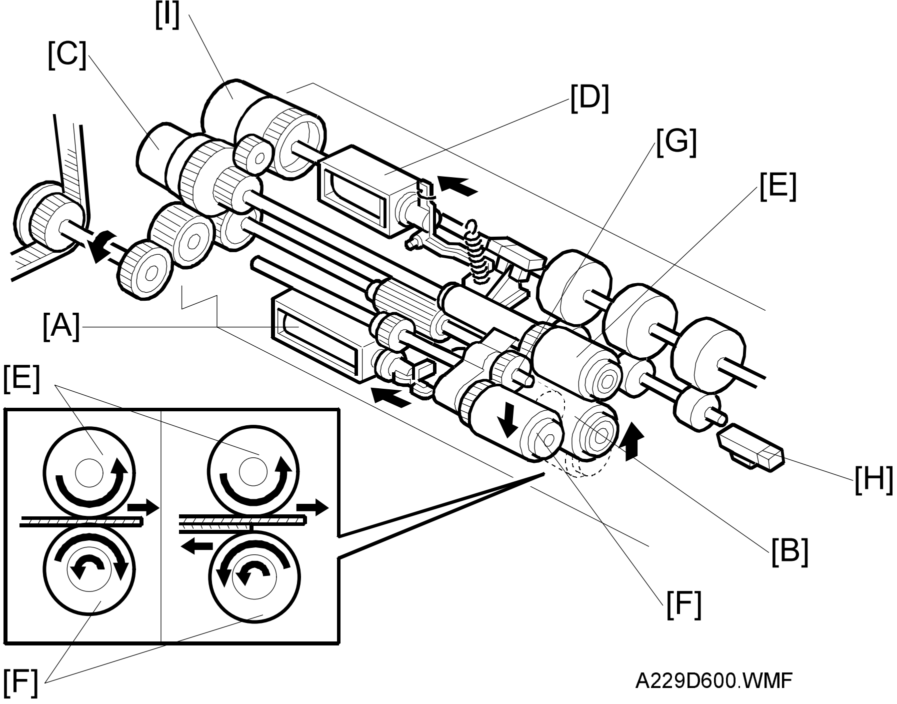
A229D598.WMF

Drive from the paper feed motor is transmitted to the gear [A] in the paper feed unit via the timing belt [B].

Then the gear [A] transmits the drive to the pick-up [C], paper feed [D] and separation [E] rollers via gears and the paper feed clutch [F].

The gear [A] also transmits the drive to the vertical transport roller [G] via gears and the vertical transport clutch [H].

Pick-up and Feed



If a paper feed station is not selected, its separation roller solenoid [A] de-activates and the separation roller [B] can turn freely in the opposite direction to paper feed.

When the paper feed station is selected and the start key is pressed, the feed clutch [C], separation roller solenoid [A], and the pick-up solenoid [D] all turn on.

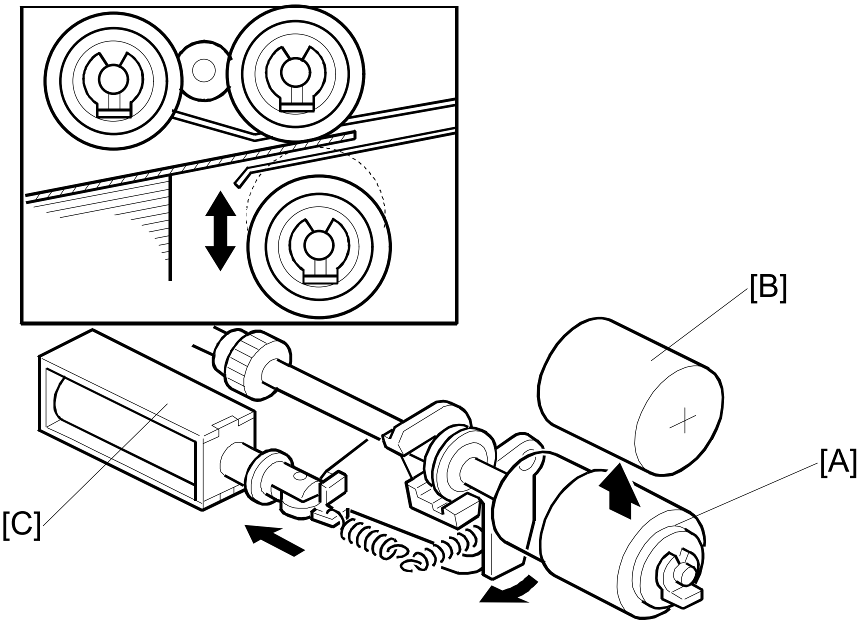
When the feed clutch [C] activates to transfer drive to the feed roller [E], the pick-up roller [F] also turns because it is linked to the feed roller by an idle gear [G].

When the separation roller solenoid [A] turns on, the separation roller [B] contacts the paper feed roller [E] and turns with the feed roller in spite of the torque limiter in the separation roller, which forces it in the opposite direction.

When the pick-up solenoid [D] activates, the pick-up roller [F] lowers to make contact with the top sheet of the paper stack and send it to the paper feed and separation rollers.

When the paper feed sensor [H] detects the leading edge of the paper, the pick-up solenoid de-energizes to lift the pick-up roller [F], and the vertical transport clutch [I] energizes to feed the paper to the vertical paper feed section.

Separation Roller Release Mechanism



A229D602.WMF

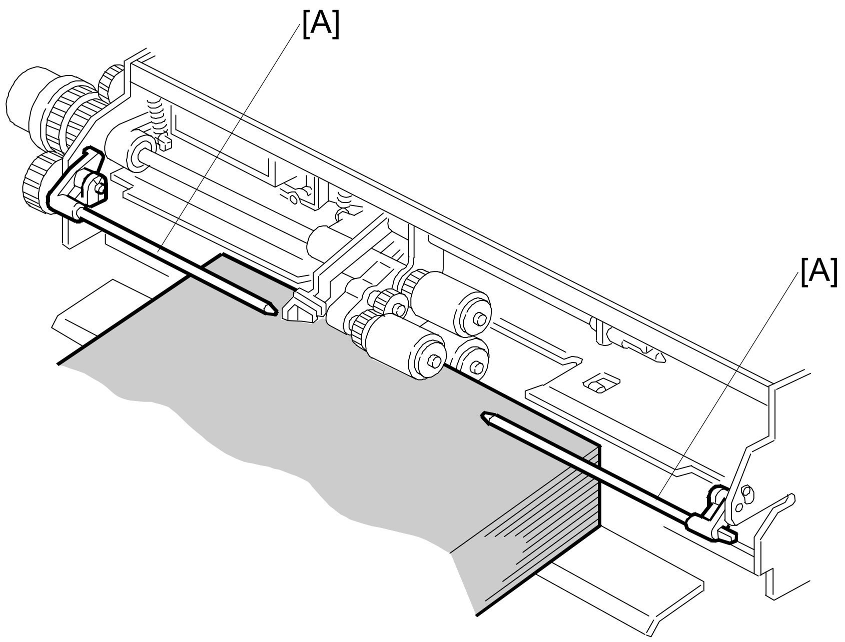
The separation roller [A] is normally away from the feed roller [B]. When the paper feed station is selected, the separation roller solenoid [C] contacts the separation roller with the feed roller as explained on the previous two pages.

This contact/release mechanism has the following three advantages:

1. When the paper feed motor turns on, all the separation rollers in the three feed stations rotate. If the separation roller is away from the feed roller, it reduces the load on the paper feed motor and drive mechanism, and it also reduces wear to the rubber surface of the separation roller caused by friction between the separation roller and the feed roller.
2. After paper feed is completed, paper sometimes remains between the feed and separation rollers. If the feed tray is drawn out in this condition, this paper might be torn. When the separation roller is away from the feed roller, the remaining paper can be removed from between the rollers.
3. When paper misfeeds occur around this area, the user can easily pull out the jammed paper between the feed and the separation rollers if the separation roller is away from the feed roller.

After paper feed and the paper feed clutch tuns off, the paper feed motor still turns the separation roller [A] in reverse. The separation roller, still contacting the feed roller, turns the feed roller in reverse for 100 ms. Then the separation solenoid turns off.

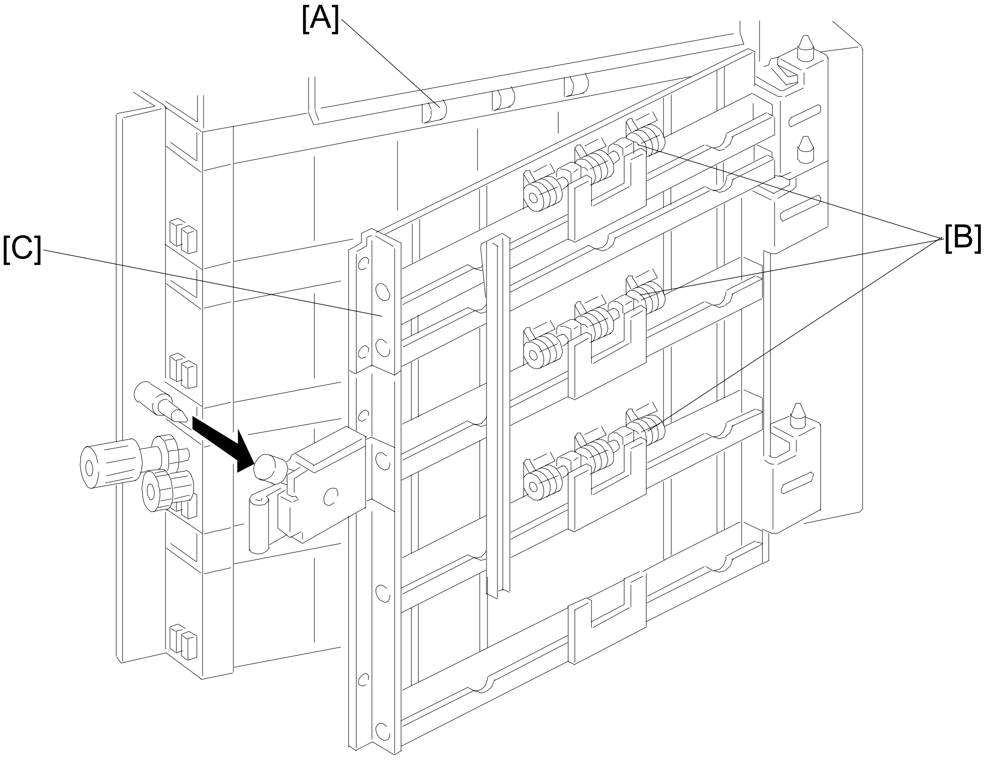
Paper Skew Prevention Mechanism



A229D603.WMF

The paper press arms [A] on each side press down both sides of the paper, especially if the paper is curled. This helps to prevent paper skew or jams.

2.8.6 VERTICAL TRANSPORT MECHANISM



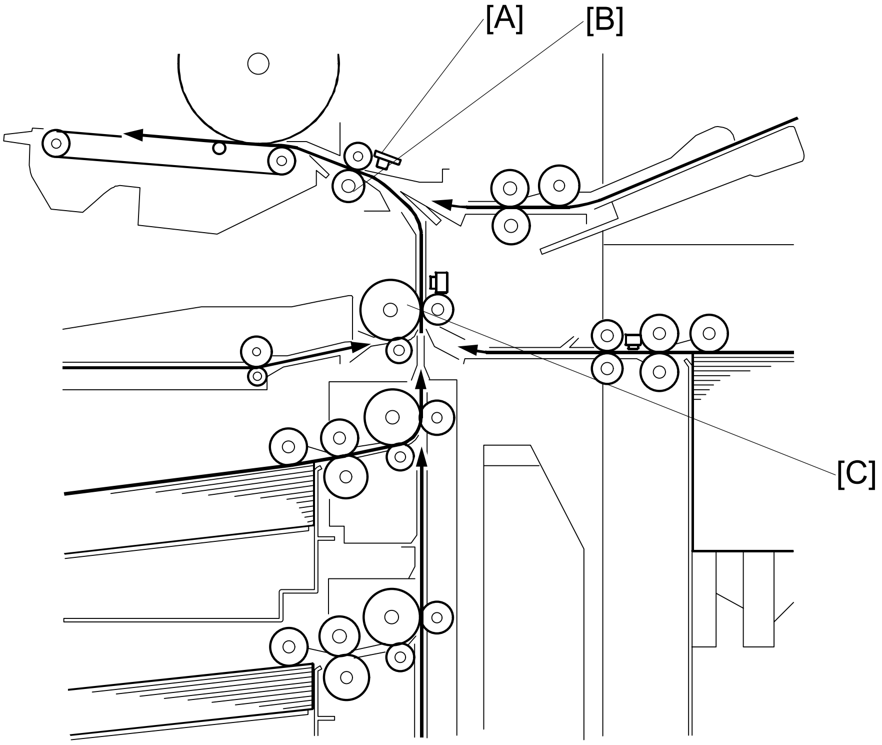
A229D617.WMF

The vertical transport rollers [A] in each feed unit are all driven by the paper feed motor. The vertical transport rollers and the idle vertical transport rollers [B], on the inner and outer vertical guide plates, transport the paper up from each feed unit towards the relay and registration rollers.

The vertical transport guides [C] can be opened to remove jammed paper in the vertical transport area.

2.8.7 PAPER REGISTRATION

Overview



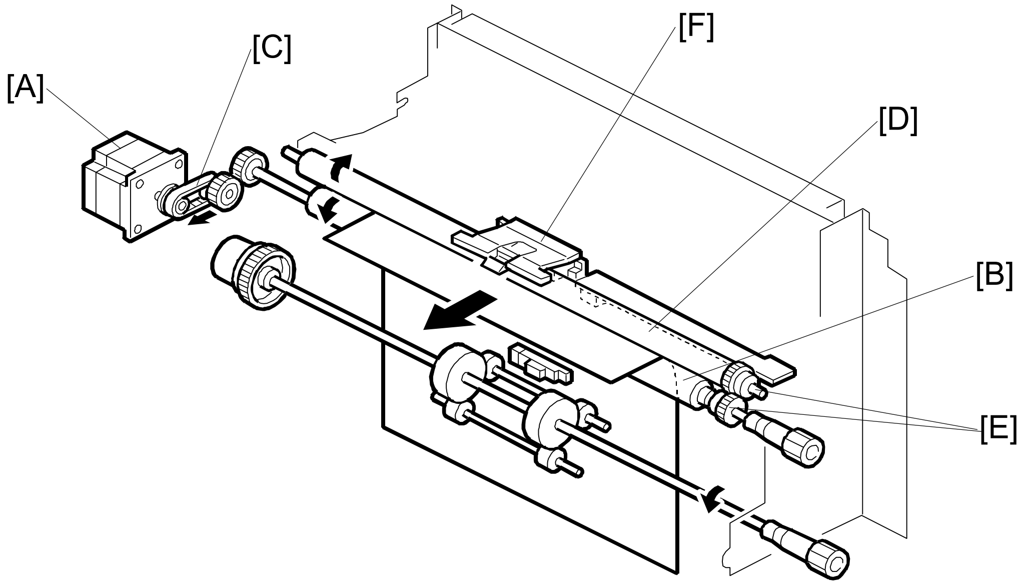
A229D595.WMF

The registration sensor [A] is positioned just before the registration rollers [B].

When the paper leading edge activates the registration sensor, the registration motor is off and the registration rollers are not turning. However, the relay clutch [C] stays on for a bit longer. This delay allows time for the paper to press against the registration rollers and buckle slightly to correct skew. Then, the registration motor energizes and the relay clutch re-energizes at the proper time to align the paper with the image on the drum. The registration and relay rollers feed the paper to the image transfer section.

The registration sensor is also used for paper misfeed detection.

Registration Drive Mechanism

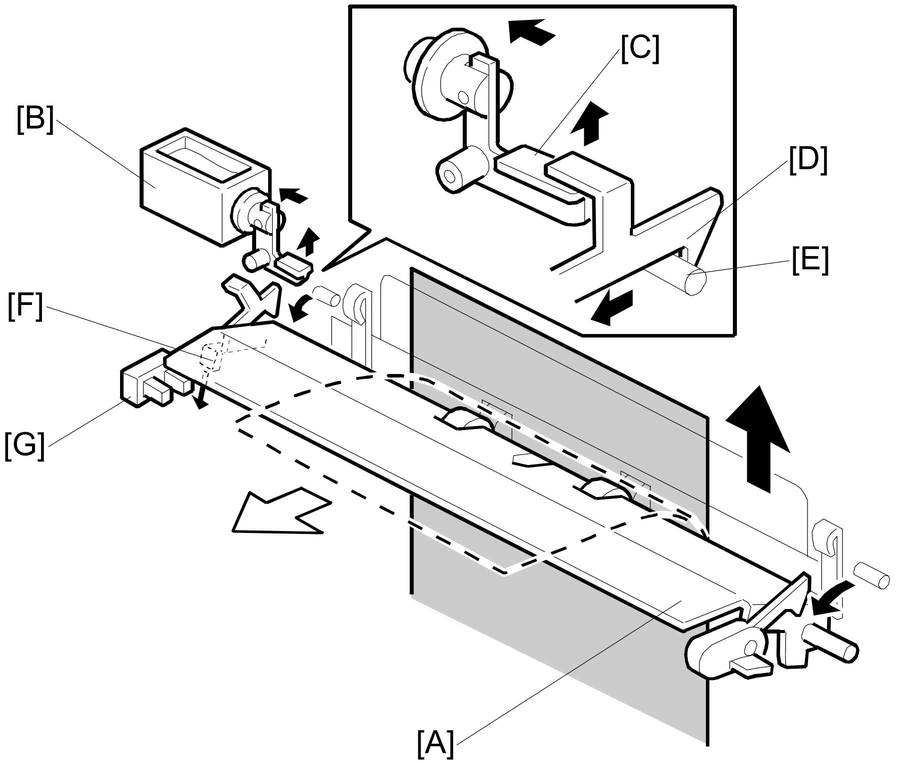


A229D596.WMF

The registration motor [A] drives the lower registration roller [B] through a timing belt [C] and some gears. Drive is transmitted to the upper registration roller [D] via two gears [E] at the front.

There is a paper dust remover [F] at the center of the upper registration roller [D]. This is in line with the feed rollers, where most paper dust is generated. Clean the dust remover every PM visit.

Guide Plate Release Mechanism



A229D597.WMF

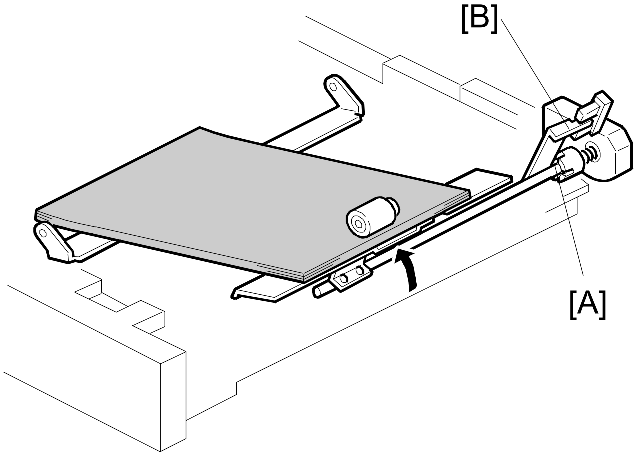
When a paper misfeed occurs between the vertical transport rollers and the registration rollers, the lower paper guide plate [A] automatically opens.

When the registration sensor is not activated at a certain jam check timing, the guide plate solenoid [B] turns on. The lever [C] raises the lock lever [D] on the guide plate to release it from the pin [E] on the rear side frame. Then the guide plate falls open.

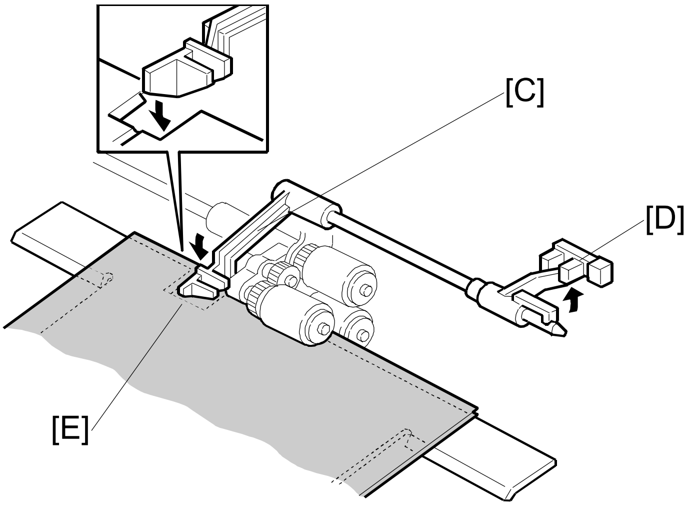
The actuator [F] on the guide plate activates the guide plate position sensor [G] when the guide plate opens.

To prevent the guide plate from being left open, if the guide plate position sensor is activated, copying is disabled and a caution is displayed on the LCD panel.

2.8.8 PAPER NEAR-END/END DETECTION – TRAYS 1 TO 3



A229D607.WMF



A229D608.WMF

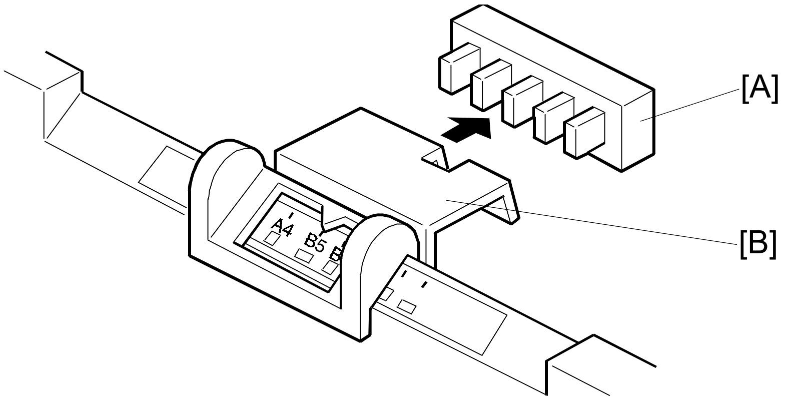
Near-end Detection

A feeler [A] on the lift arm shaft rotates counterclockwise as the paper is used up. When about 50 sheets are left on the tray, the feeler activates the paper near end sensor [B].

End Detection

If there is paper in the tray, the paper end feeler [C] is raised by the paper stack and the paper end sensor [D] is deactivated. When the paper tray runs out of paper, the paper end feeler drops into the cutout [E] in the tray bottom plate and the paper end sensor is activated.

2.8.9 PAPER SIZE DETECTION – TRAY 2



A229D614.WMF

SW Actuated – 0 De-actuated – 1	Paper size	L: Lengthwise S: Sideways
	A4/A3 Version	LT/DLT Version
00111	A3-L	11 x 17-L
00011	8 1/4 x 13	8 1/2 x 14-L
10011	A4-L	8 1/2 x 11-L
01001	A4-S	8 1/2 x 11-S
00100	81/2 x 13	5 1/2 x 8 1/2-S
00010	–	8 x 10-S
00001	A5-S	8 x 10-L
10000	8 k-L (Taiwan version only)	8 x 13-L
11000	16 k-L (Taiwan version only)	10 x 14-L
11100	16 k-S (Taiwan version only)	11 x 15-L
11110	*	*

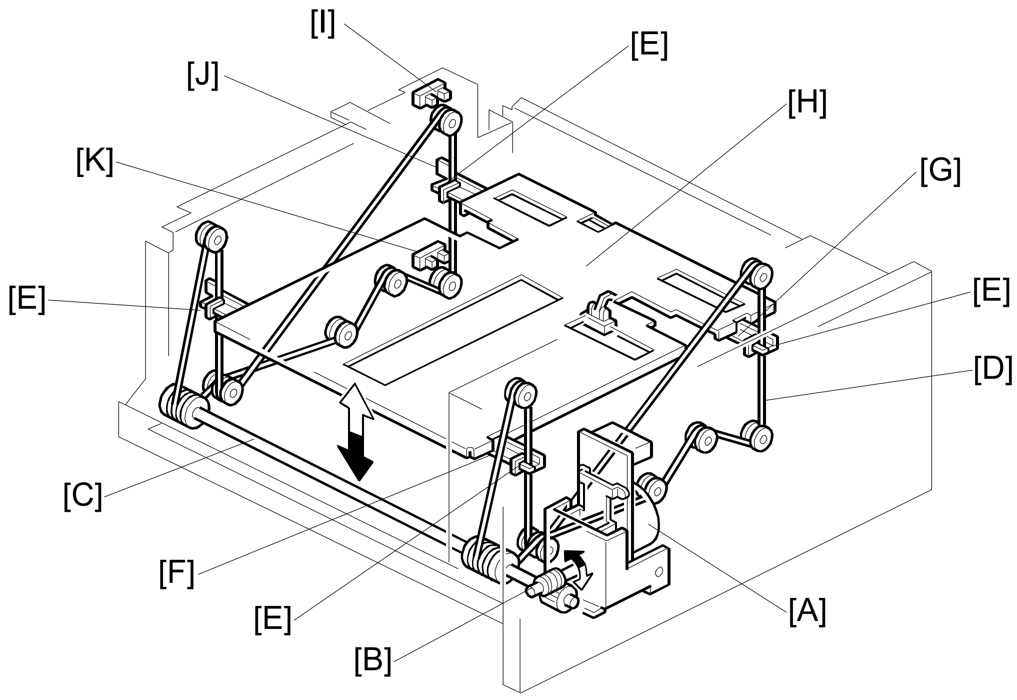
For the first and the third feed trays, the paper size has to be stored with a UP mode.

For the second feed tray (universal tray), the paper size switch [A] detects the paper size. The paper size switch contains five microswitches. The paper size switch is actuated by an actuator plate [B] at the rear of the tray. Each paper size has its own unique combination as shown in the table and the CPU determines the paper size by the combination.

Using the asterisk setting (*), a wider range of paper sizes can be used, but the size has to be entered with a UP mode.

2.8.10 BUILT IN LCT

Paper Tray Lift Mechanism



A229D621.WMF

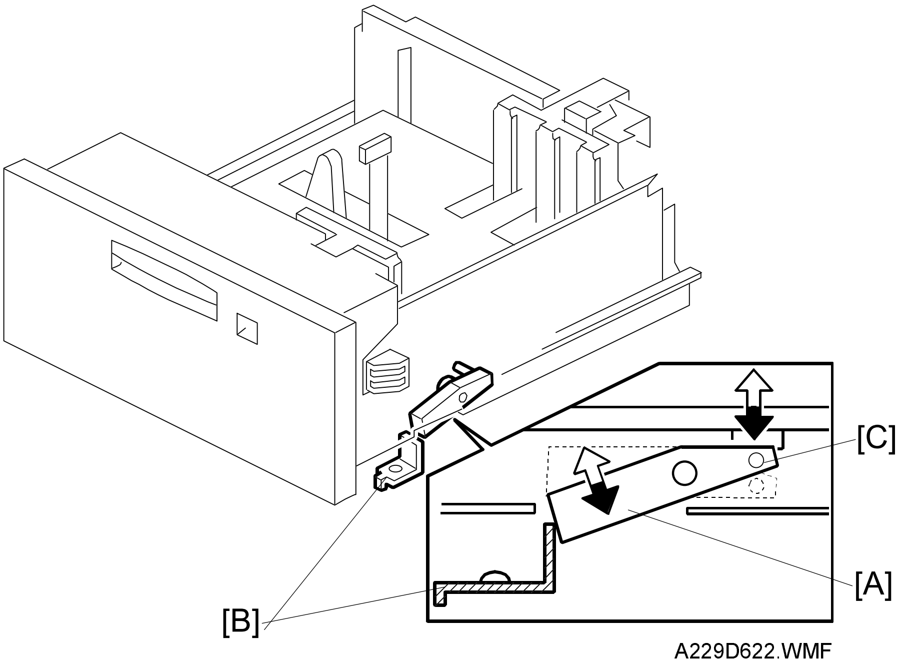
Drive from the reversible LCT motor [A] is transmitted through a worm gear [B] to the drive pulley shaft [C]. The tray wires [D] are secured in the slots [E] at the ends of the tray support rods [F] and [G].

When the LCT motor turns forward and the drive pulley shaft [C] turns counterclockwise, the tray support rods and the tray bottom plate [H] move upward. The tray goes up until the top of the paper stack pushes up the pick-up roller, and the 3rd tray lift sensor is activated.

The paper near end sensor [I] detects the paper near end condition when it is activated by the actuator [J] on the rear end of the right support rod [G].

To lower the tray bottom plate [H], the LCT motor reverses and the drive pulley shaft [C] turns clockwise. The tray support rods and the tray bottom plate move downward. The tray goes down until the tray down sensor [K] is activated by the actuator [J].

Tray Lock Mechanism

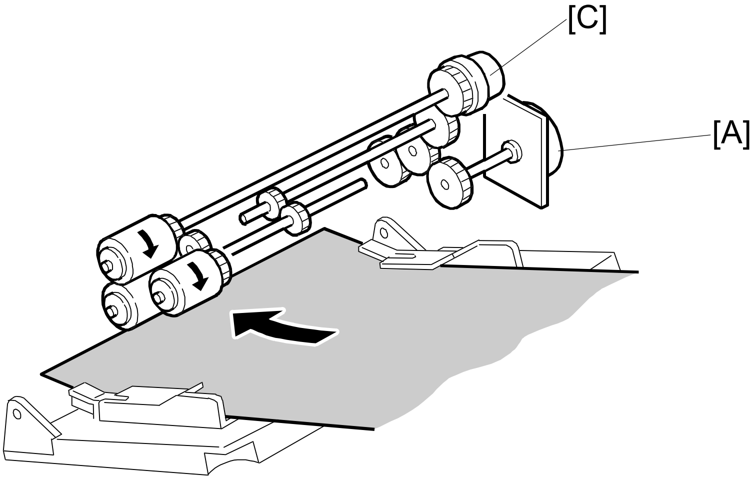


When the tray bottom plate starts moving up, the tray lock lever [A] drops into the opening in the base plate to engage the stopper [B], locking the tray in position. This prevents the tray from being pulled out while the bottom plate is up.

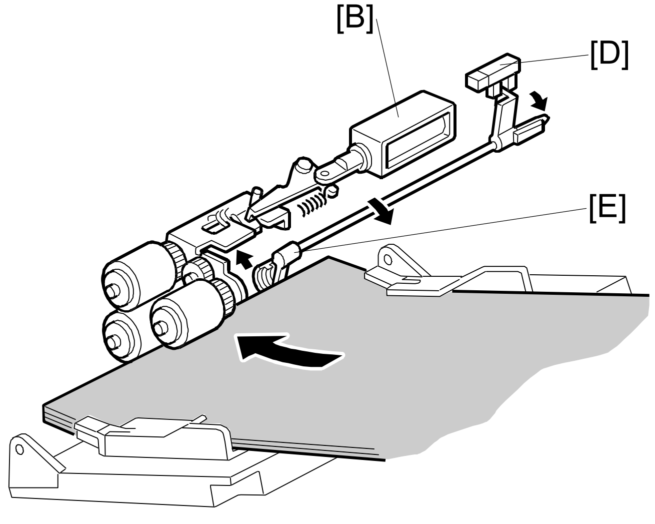
When the bottom plate is lowered to the bottom position, the bottom plate presses down the pin [C] on the lock lever. The opposite end of the lever then moves up, allowing the tray to be pulled out.

2.8.11 BY-PASS FEED TABLE

Feed Mechanism/Paper End Detection



A229D623.WMF



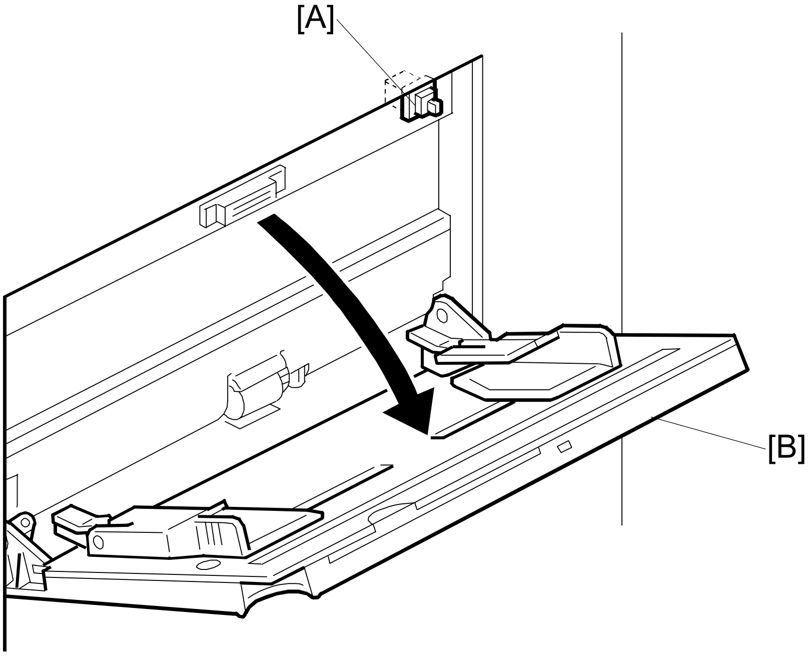
A229D624.WMF

The by-pass feed table uses an FRR feed system. The by-pass feed motor [A] drives the rollers. The pick-up solenoid [B] drops the pick-up roller onto the top sheet of paper, and the by-pass feed clutch [C] transfers drive from the motor to the feed roller.

The by-pass paper end sensor [D] detects if there is paper on the by-pass feed table.

When there is no paper on the by-pass feed table, the paper end feeler [E] drops into the cutout in the lower guide plate and the paper end sensor [D] deactivates. When there is paper on the by-pass feed table, the paper pushes up the feeler to activate the paper end sensor [D]. The CPU turns off the paper end indicator on the LCD panel and turns the start key from red to green.

Table Open/Close Detection

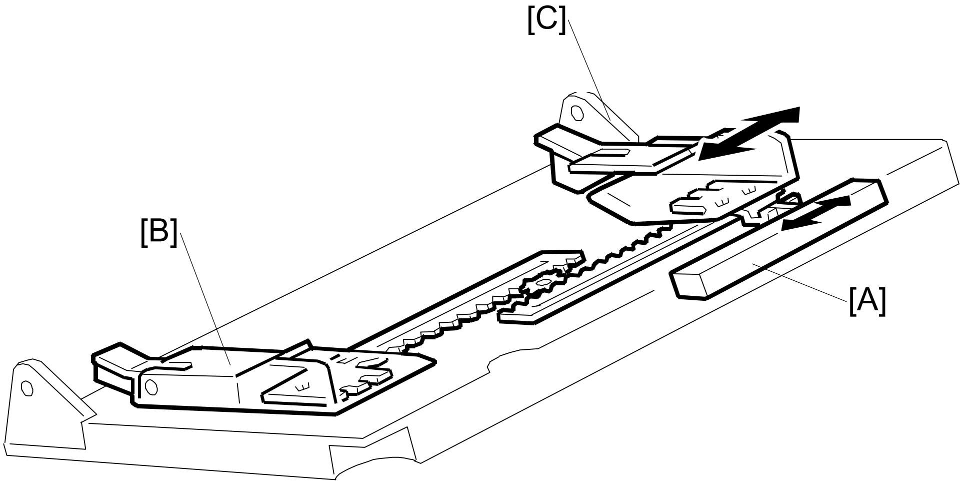


A229D593.WMF

The by-pass tray switch [A] detects when the by-pass feed table [B] is opened. Then the CPU turns on the by-pass feed indicator on the operation panel. The start key LED remains red until paper is placed on the tray (see the previous page).

In this model, opening the by-pass feed table does not shift the copier into interrupt mode. The selected modes and input data before opening the by-pass feed table remain. Also, other paper trays can be selected while the by-pass feed table is open.

Paper Size Detection



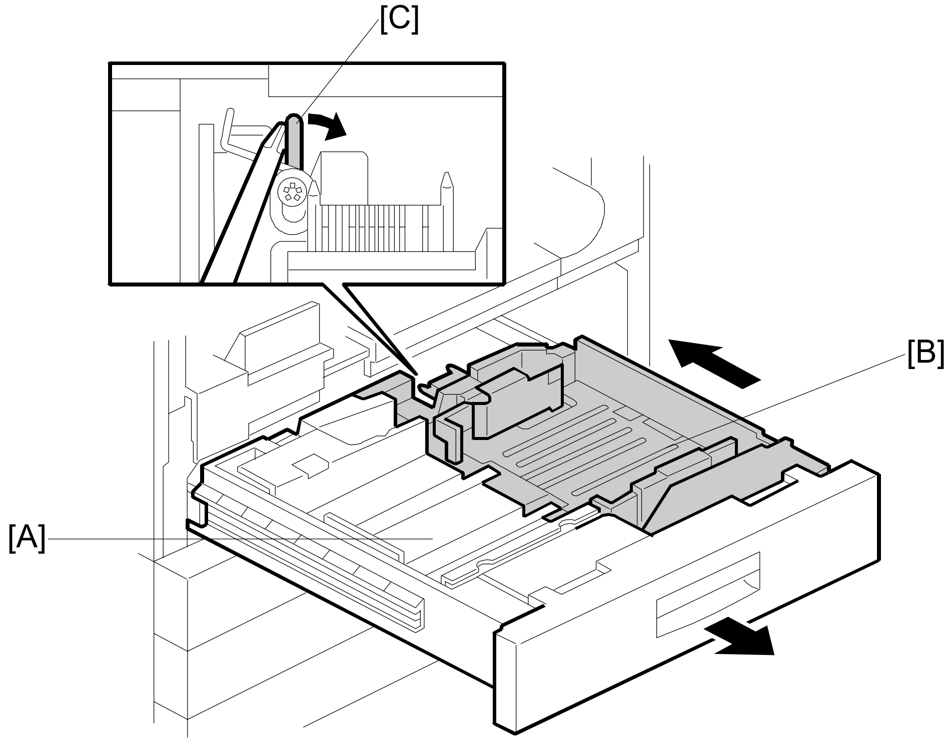
A229D594.WMF

The by-pass paper size sensor [A] (variable resistor) monitors the paper width. The rear side fence is connected to the by-pass paper size sensor actuator. When the paper side fences [B] and [C] are positioned to match the paper width, the electrical resistance of the sensor changes in accordance with the side fence position, This informs the CPU of the paper width.

For the first copy from the by-pass feed table, the scanner makes a full distance scan. For example, for A4 sideways copy paper (the same width as A3), the scanner scans the full A3 length of the exposure glass. However, the registration sensor measures the length of the first sheet of paper (by monitoring the leading and trailing edges). For the second and following copies, the copier uses the correct paper length.

2.8.12 TANDEM FEED TRAY

Overview

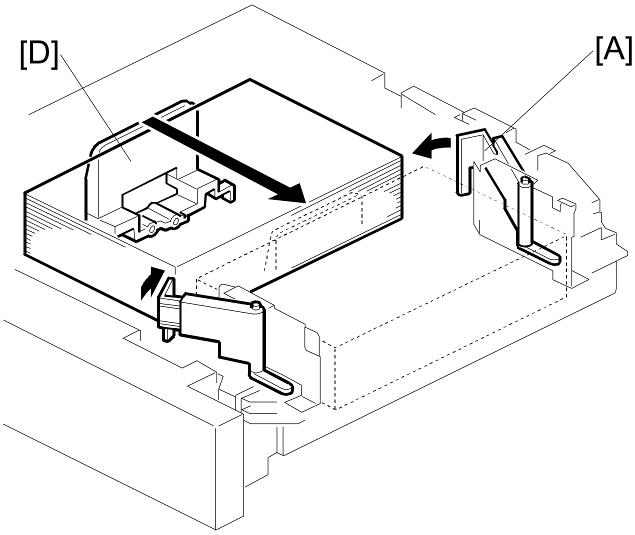


A229D609.WMF

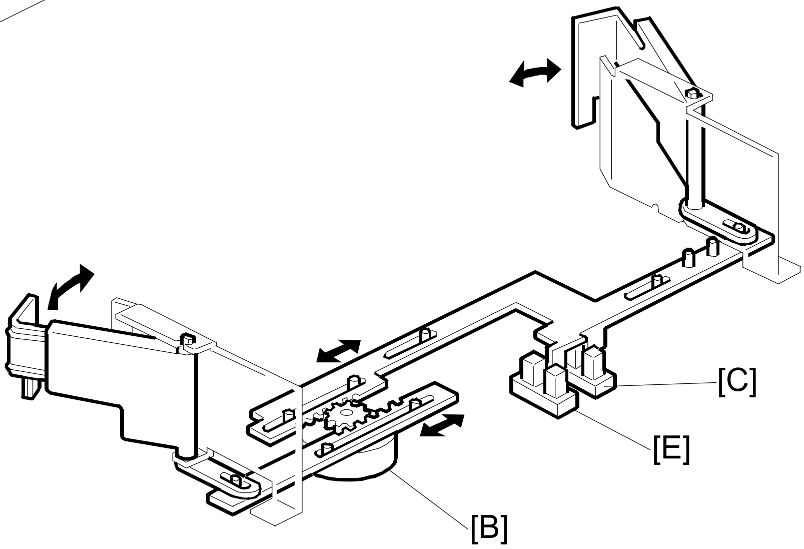
500 sheets of paper can be placed in each of the left [A] and right trays [B]. Paper is fed from the right tray. When the paper in the right tray runs out, the stack in the left tray is automatically moved across to the right tray. After that, paper feed resumes.

Normally both the right and the left trays are joined together by the tray lock hook [C]. During copying, if there is no paper in the left tray, the left tray is released and can be pulled out to add paper, without interrupting copying from the stack in the right side of the tray.

Side Fence Drive Mechanism



A229D610.WMF



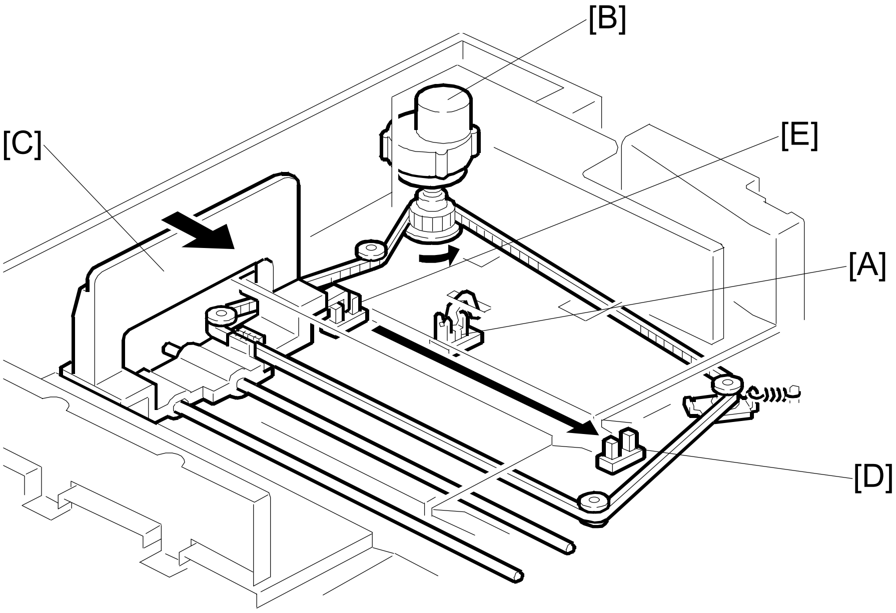
A229D611.WMF

The side fences [A] of the right tray are normally closed. They open only when the stack of paper in the left tray is being moved across to the right tray.

The side fences are driven by the side fence drive motor [B] (a stepper motor). When the paper stack in the left tray is being moved to the right tray, the side fence drive motor turns counterclockwise to open the side fences until the side fence positioning sensor [C] is activated.

After the rear fence [D] in the left tray has pushed the stack into the right tray, the side fence drive motor turns clockwise to close the side fences, until the side fence close sensor [E] is actuated. Then, a message is displayed advising the user to load some paper into the left side of the tandem tray.

Rear Fence Drive Mechanism



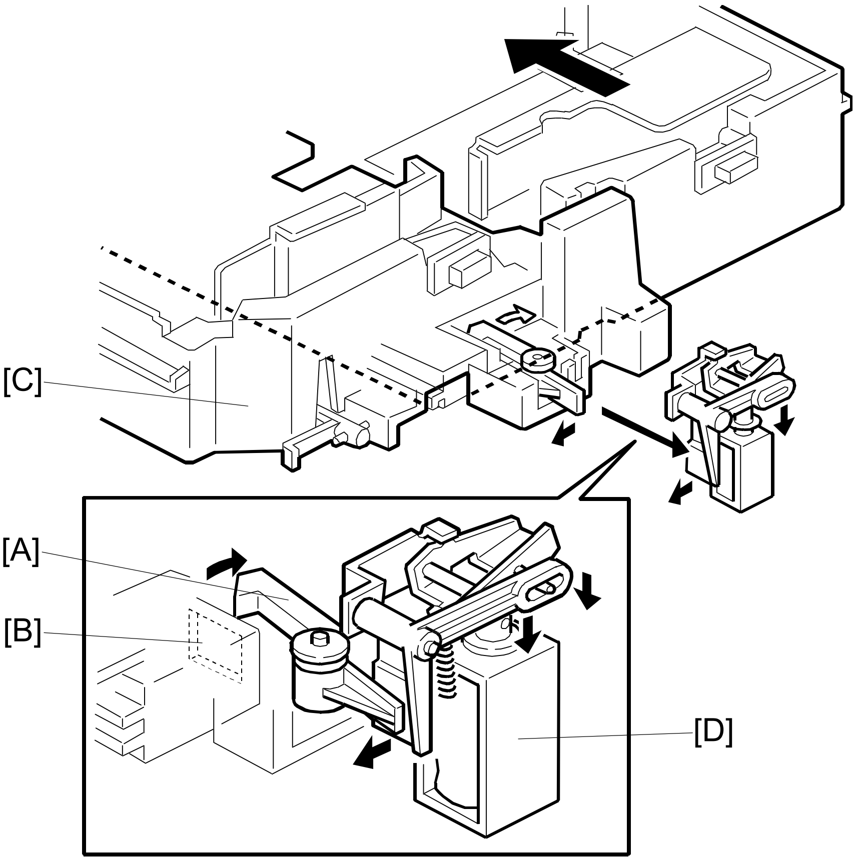
A229D612.WMF

When the paper end sensor [A] in the left tray detects paper but the paper end sensor in the right tray detects a paper end condition, the rear fence drive motor [B] (a dc motor) in the left tray turns counterclockwise to drive the rear fence [C] to push the paper stack into the right tray.

When the actuator on the rear fence activates the return position sensor [D], the rear fence drive motor turns clockwise until the actuator activates the rear fence home position sensor [E].

The whole process takes about 5 seconds.

Tray Lock Mechanism



A229D613.WMF

Normally, the tray lock lever [A] is in the cutout [B] in the left tray [C], locking it in place. During copying, if paper in the left tray runs out, the tandem lock solenoid [D] turns on to release the tray lock lever so that the left tray can be separated from the right tray.

Tray Lifting and Lowering Mechanism

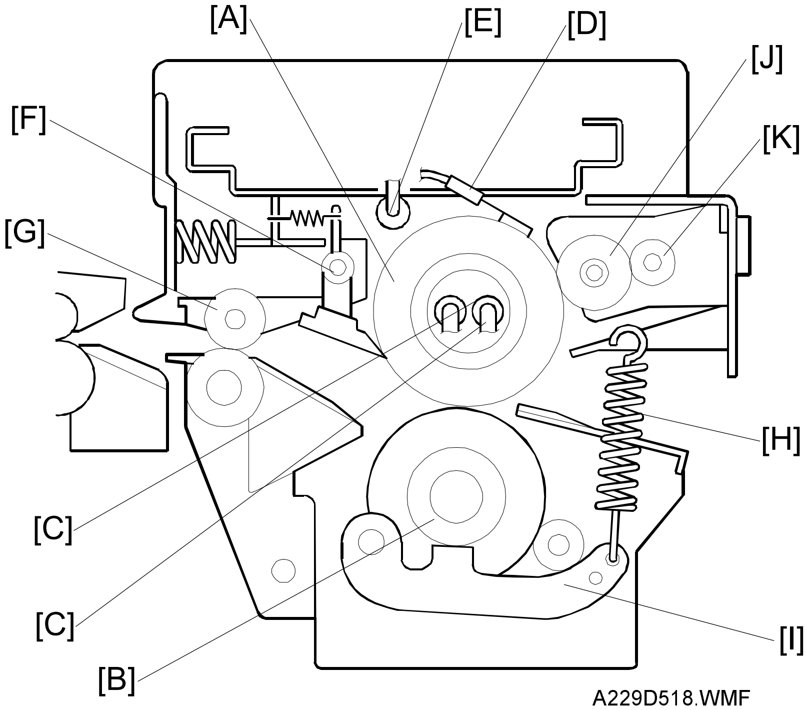
The tray lift mechanism is the same as described in ‘Paper Lift Mechanism’.

However, the tray bottom plate has to be lowered without the tray being pulled out. This must happen before the stack in the left tray is moved across to the right side of the tray.

When it is time to move the stack, the tray lift motor lowers the bottom plate until the actuator on the bottom of the plate enters the base plate down sensor (no diagram available). Then the stack in the left side of the tray is moved across to the right as described in earlier sections.

2.9 IMAGE FUSING

2.9.1 OVERVIEW



After the developed latent image is transferred from the drum to the paper, the copy paper enters the fusing unit. Then the image is fused to the copy paper by a heat and pressure process through the use of a hot roller [A] and pressure roller [B].

There are two fusing lamps in the hot roller. Both lamps are 550 W lamps. They switch on and off at the same time.

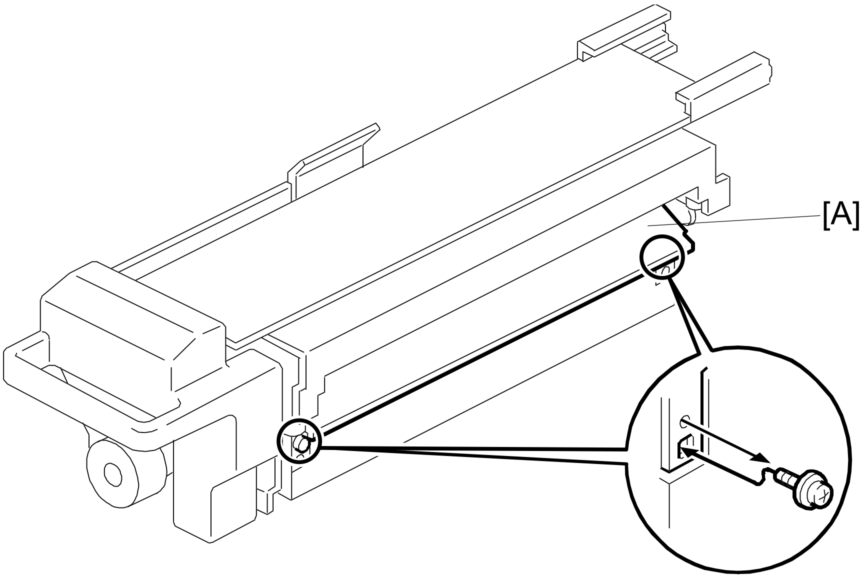
The fusing lamps turn on and off to keep the operating temperature at 185°C. The CPU monitors the hot roller surface temperature through a thermistor [D] which is in contact with the hot roller surface. A thermofuse [E] protects the fusing unit form overheating.

The hot roller strippers [F] separate the copy paper from the hot roller and direct it to the fusing exit rollers [G]. The exit sensor in the inverter and paper exit unit monitors the progress of the copy paper through the fusing unit and acts as a misfeed detector while the exit rollers feed the copy paper to the inverter section.

The hooking position of the tension springs [H] on the pressure lever [I] adjusts the roller pressure.

The oil supply roller [J] applies a light coat of silicone oil to the hot roller. The oil supply cleaning roller [K] remove the paper dust accumulated on the cleaning roller.

2.9.2 FUSING ENTRANCE GUIDE



A229D519.WMF

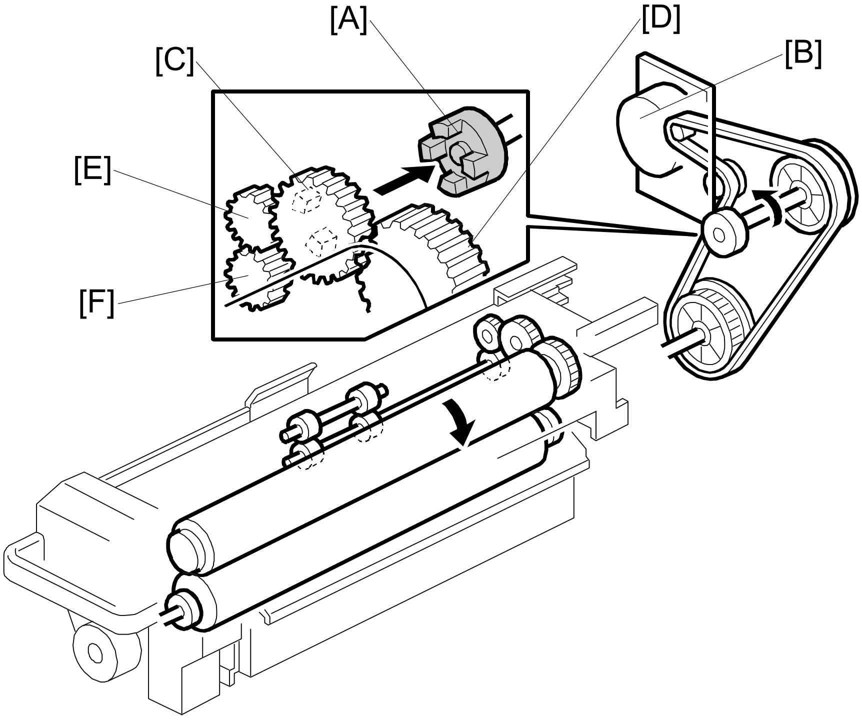
The entrance guide [A] for this machine is adjustable for thick or thin paper.

For thin paper, the entrance guide should be in the upper position (this is the standard position). This slightly lengthens the paper path which prevents the paper from creasing in the fusing unit.

For thick paper, move the entrance guide to the lower position. This is because thick paper does not bend as easily, and is therefore less prone to creasing. Also, the lower setting allows more direct access to the gap between the hot and pressure rollers. This prevents thick paper from buckling against the hot roller, which can cause blurring at the leading edge of the copy.

In this model, the transfer belt improves paper transport and the paper path to the fusing entrance is stabilized. This reduces the chance of paper creasing due to paper skew in the fusing unit.

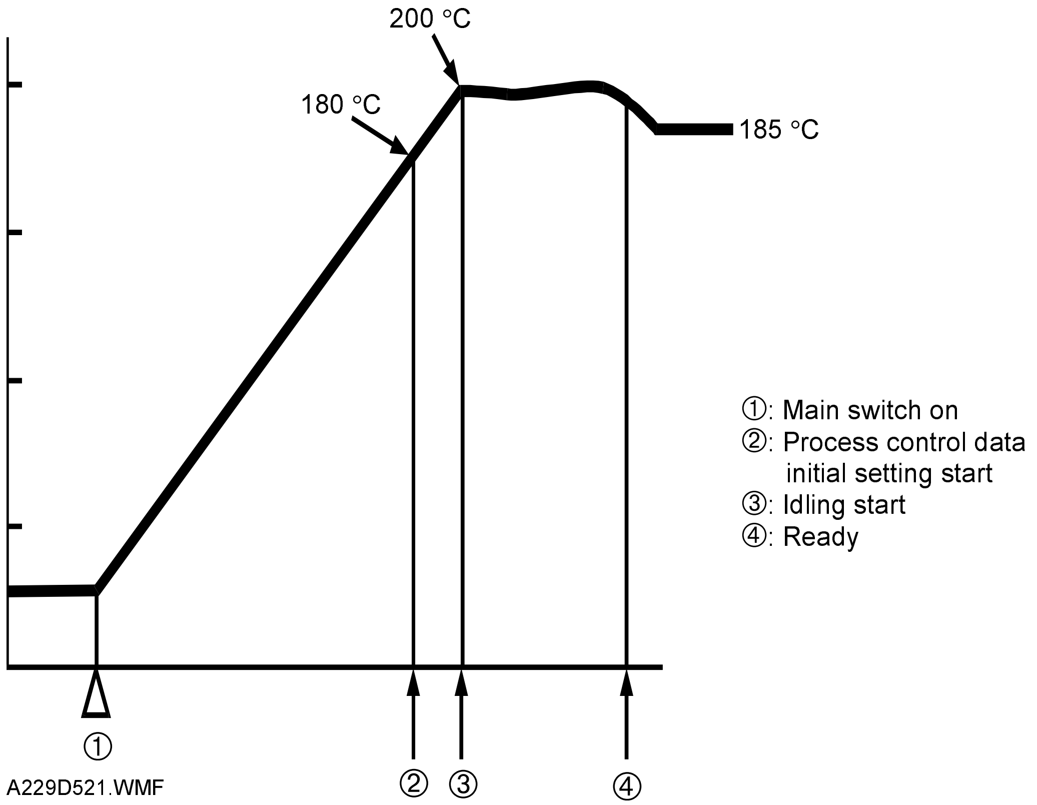
2.9.3 FUSING DRIVE MECHANISM



A229D520.WMF

The fusing drive gear [A] transmits drive from the fusing/duplex drive motor [B] to the gear [C], which drives the hot roller gear [D]. Rotation passes from the gear [C] through the idle gear [E] to the exit roller drive gear [F]. The pressure roller is driven by the friction between the hot and pressure rollers.

2.9.4 FUSING LAMP CONTROL



A229D521.WMF

When the main switch is turned on, the CPU turns on the two fusing lamps.

When the fusing temperature reaches 180°C, the machine starts the process control data initial setting. If the fusing temperature was already above 100°C when the main switch was turned on, process control initial setting is not done.

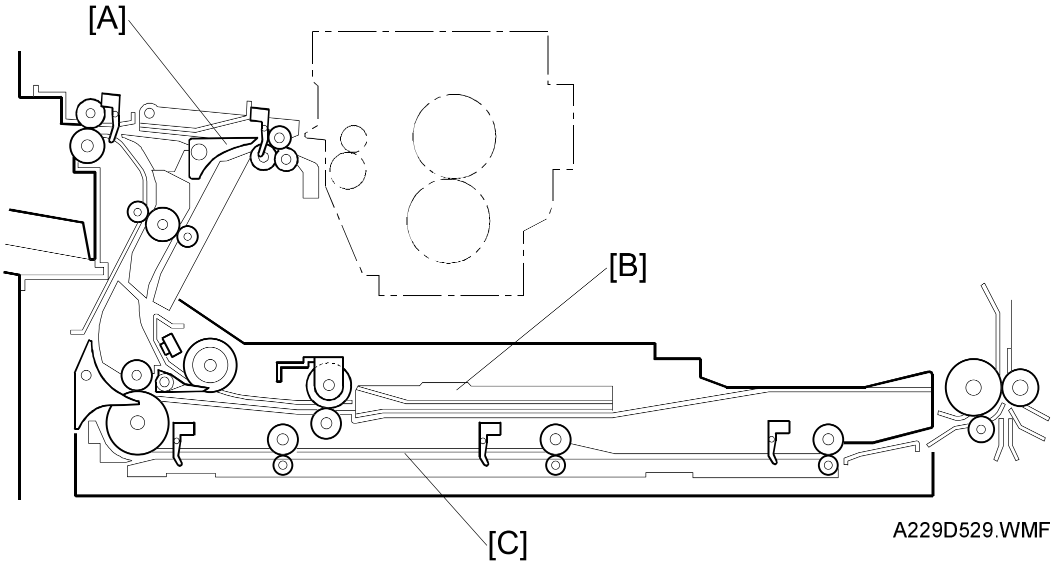
When the CPU detects a fusing temperature of 200°C, the copier starts fusing idling. The idling period can be adjusted with SP mode 1-103. If the fusing temperature was already above 100°C when the main switch was turned on, the copier does not go into the fusing idling mode.

When fusing idling has finished, the warm-up period is completed and the Ready indicator turns on. After this, fusing temperature is kept at 185°C.

The CPU changes the fusing lamp on period depending on the temperature measured by the thermistor to keep the fusing temperature as close as possible to the target temperature.

2.10 PAPER EXIT/DUPLEX

2.10.1 OVERVIEW

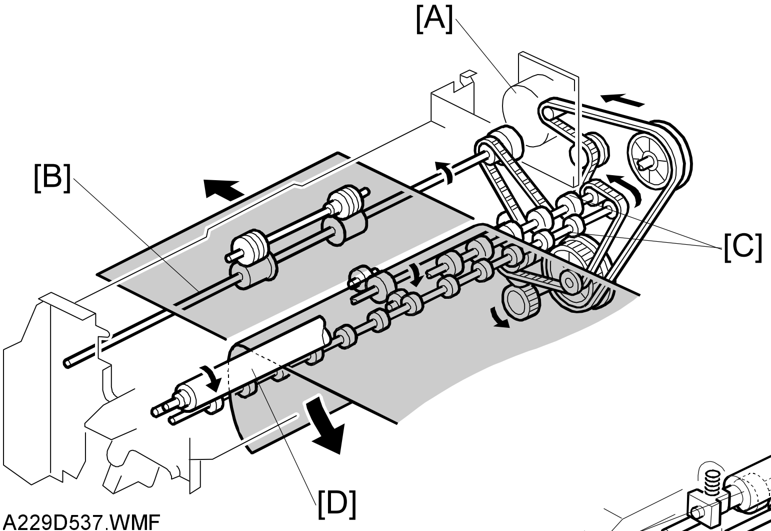


The printed page from the fusing unit goes either straight through to the output tray or finisher, or downward through to the inverter or duplex unit, depending on the position of the junction gate [A].

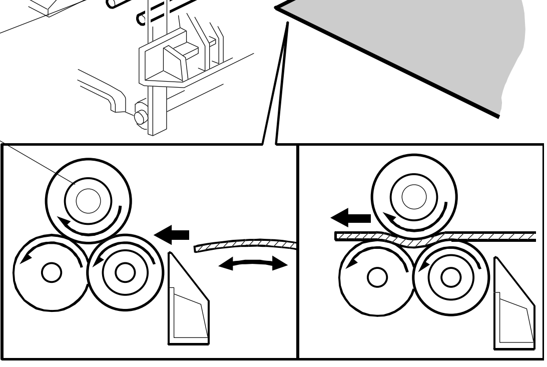
If the page is fed out directly, it arrives on the tray face-up. If the user selected face-down output, the page goes to the inverter [B] before being fed out.

If the user selects duplex mode, the page is directed to the duplex tray [C] after inverting, and back to the machine for printing the second side.

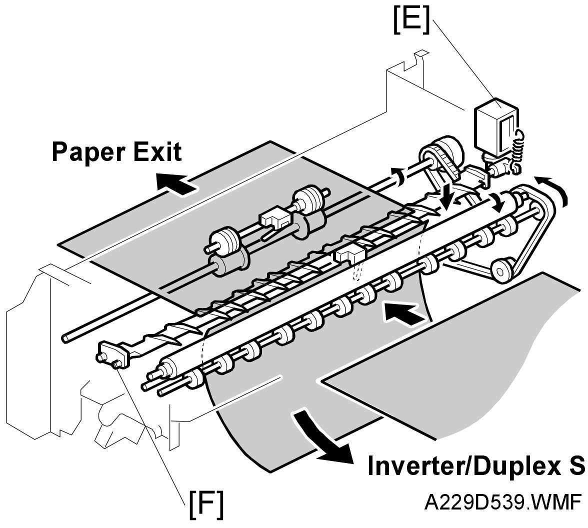
2.10.2 PAPER EXIT MECHANISM



A229D537.WMF



A229D538.WMF



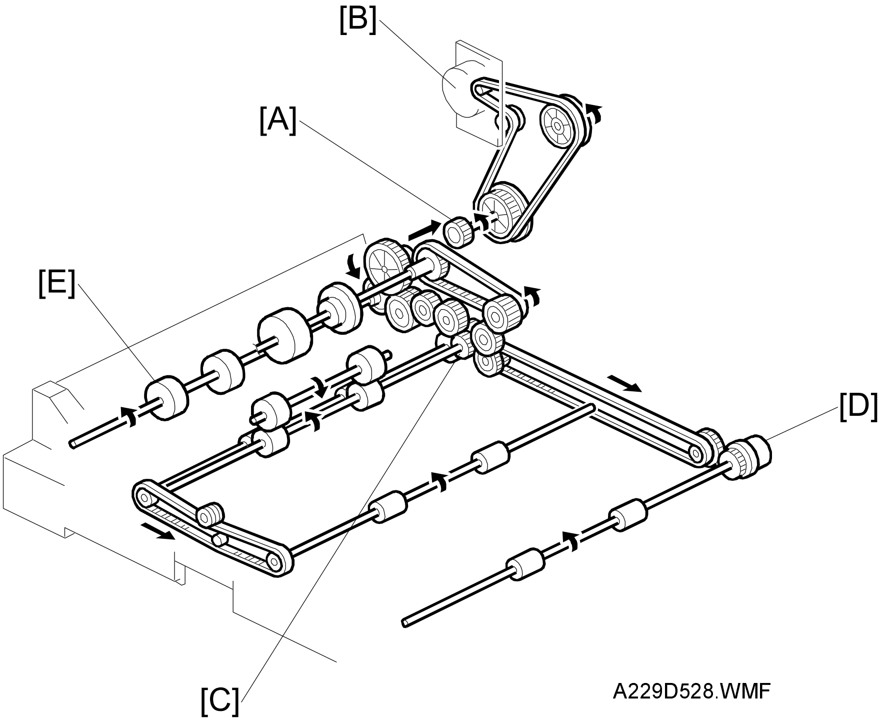
A229D539.WMF

Drive from the fusing/duplex motor [A] is transmitted to the paper exit roller [B] and transport rollers [C].

The curl correction roller [D] removes the paper curl caused by the fusing unit, to prepare it for the next process (duplexing or finishing).

To feed the printed page from the fusing unit straight through to the output tray or finisher, the inverter gate solenoid [E] energizes to open the junction gate [F]. To feed the page to the inverter and duplex unit, the solenoid stays off.

2.10.3 DUPLEX DRIVE MECHANISM



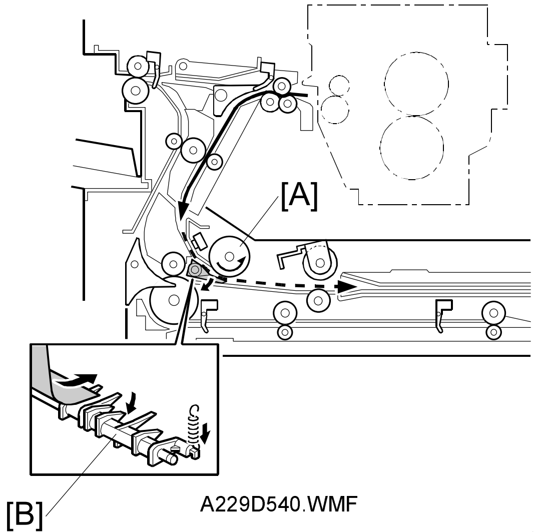
The duplex drive gear [A] transmits drive from the fusing/duplex drive motor [B] to the duplex unit.

The duplex transport clutch [C] transmits this drive to the duplex transport section, and the duplex feed clutch [D] transmits it to the duplex paper feed-out section.

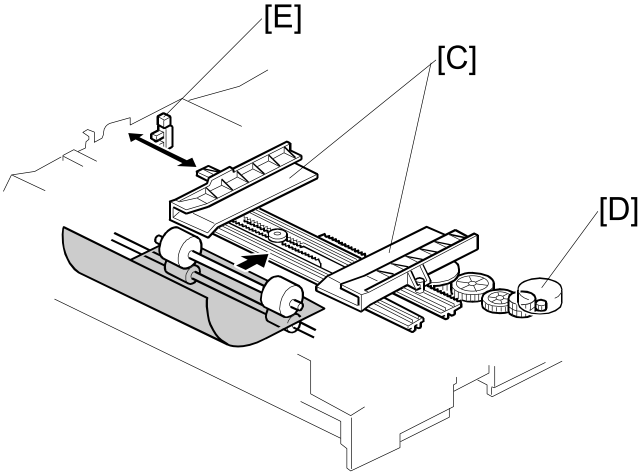
The inverter exit roller [E] is driven by the gear [A], and this roller always turns while the fusing/duplex drive motor is on.

2.10.4 INVERTER

Feed-in and Jogging



A229D540.WMF



A229D541.WMF

When the paper is fed to the jogger section by the inverter feed roller [A], it pushes down the gate [B]. After the paper passes through the gate [B], the jogger fences [C] move to square the paper. This happens every page.

NOTE: The gate has no solenoid. A spring pushes the gate back up again after the paper has gone.

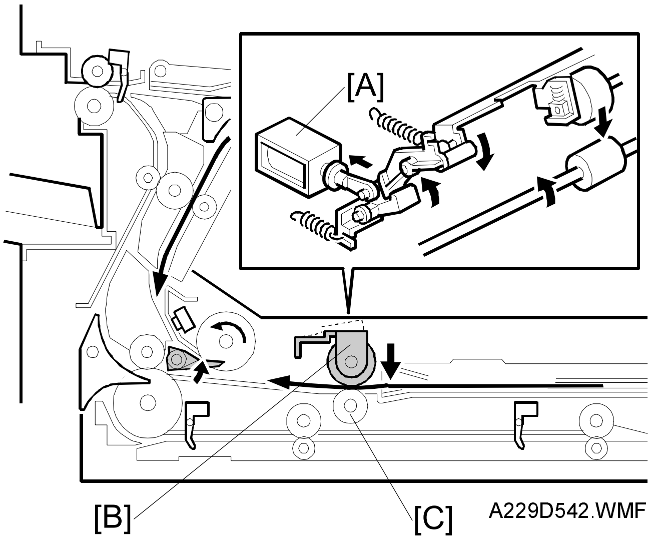
The jogger motor (a stepper motor) [D] moves the jogger fences [C] inward or outward.

When the main switch is turned on, the jogger motor places the jogger fences at the home position, which is determined by monitoring the signal from the jogger home position sensor [E].

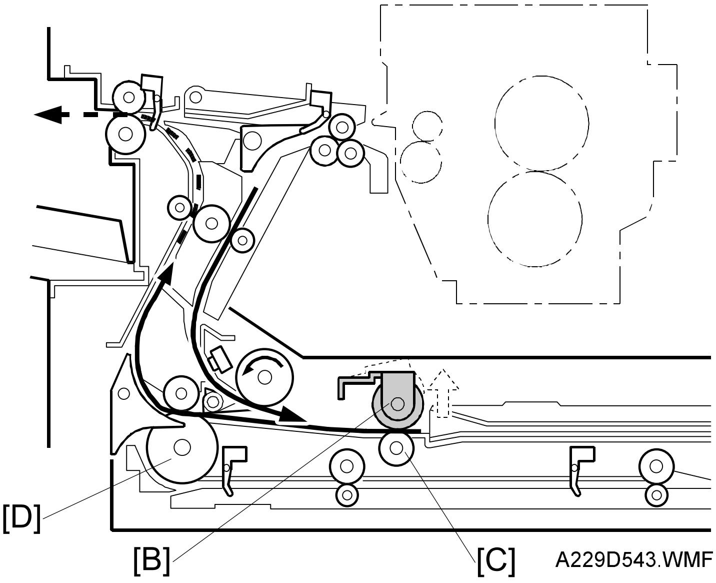
When the start key is pressed, the jogger motor positions the jogger fences 10 mm away from the selected paper size to wait for the paper.

When the paper is delivered to the jogger fences, the jogger fences move inward to square the paper. After this, the jogger fences move back to the previous position (10 mm away from the paper).

Feed-out



A229D542.WMF

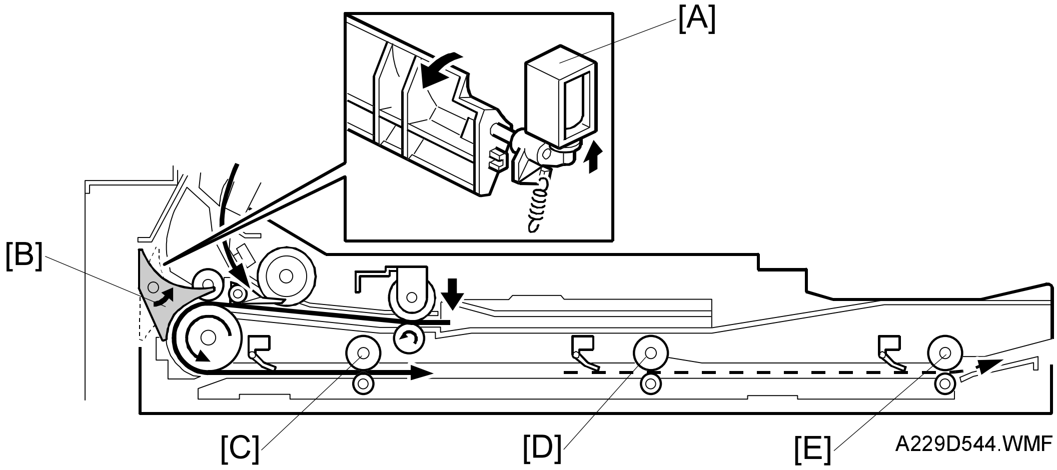


A229D543.WMF

After jogging, the reverse roller solenoid [A] energizes to push down the reverse trigger roller [B]. The reverse roller [C] turns counterclockwise continuously, so the paper starts to reverse when the reverse trigger roller is down and catches the paper between the rollers.

The paper is fed from the reverse roller to the inverter exit roller [D]. After the paper starts to be fed by the inverter exit roller, the reverse trigger roller moves back up.

2.10.5 DUPLEX TRAY FEED MECHANISM



In duplex mode, after the paper leaves the inverter, the duplex inverter solenoid [A] switches the junction gate [B] to direct the paper to the duplex tray. The paper is fed through the duplex tray by duplex transport rollers 1 [C] and 2 [D], and the duplex feed roller [E].

If duplex mode is not selected, the solenoid does not switch the junction gate, and the paper goes to the output tray or finisher face down.

2.10.6 BASIC DUPLEX FEED OPERATION

To increase the productivity of duplex copying, a non-stacking style duplex mechanism is adopted. This type of mechanism allows more than one page to be processed at once, in a process called ‘interleaving’. Examples of this are given below.

For paper lengths up to A4/Letter lengthwise, the top duplex speed is possible, with the duplex unit processing three sheets of copy paper at the same time.

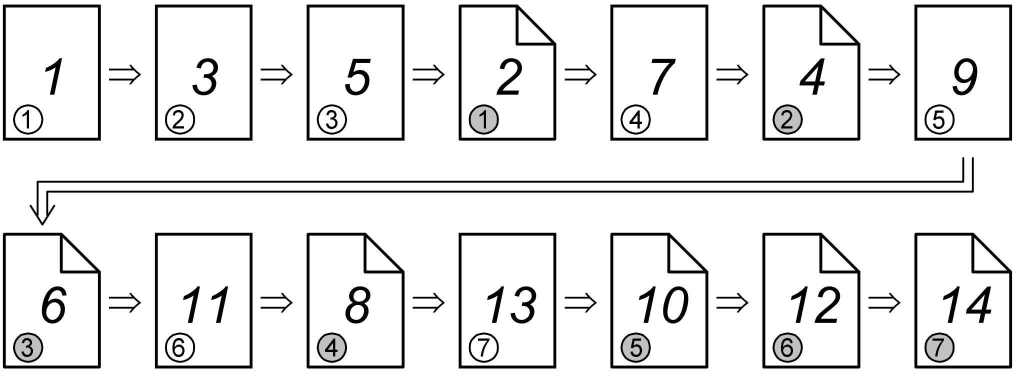
For paper longer than this, the duplex tray can still process two sheets of copy paper at once.

In case of single set duplex copy job, the duplex stores only one sheet of copy paper.

Up to A4 / Letter lengthwise

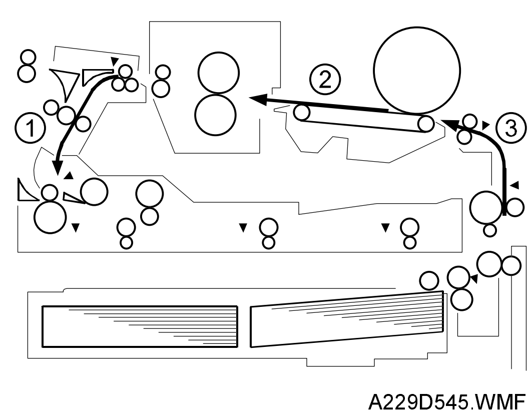
The duplex unit can process three sheets of copy paper

Example: A 14-page copy. The large numbers in the illustration show the order of pages. The small numbers in circles show the order of sheets of copy paper (if shaded, this indicates the second side).



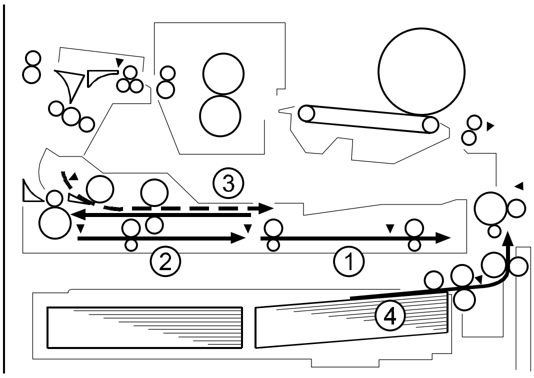
A229D550.WMF

1. The first 3 sheets are fed and printed.
   1) 1st sheet printed (1st page)
   2) 2nd sheet printed (3rd page)
   3) 3rd sheet printed (5th page)



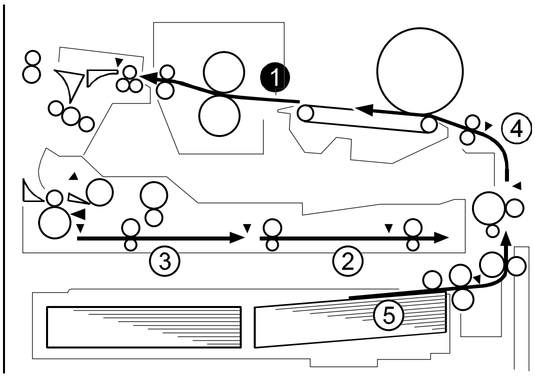
A229D545.WMF

2. The first 3 sheets go into the duplex unit.
3. The 4th sheet is fed in.



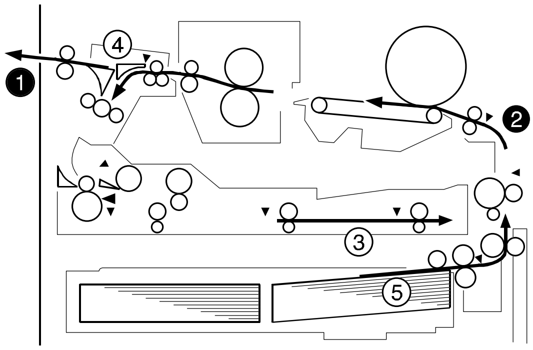
A229D546.WMF

4. The back of the 1st sheet is printed (2nd page).
5. The 4th sheet is printed (7th page).



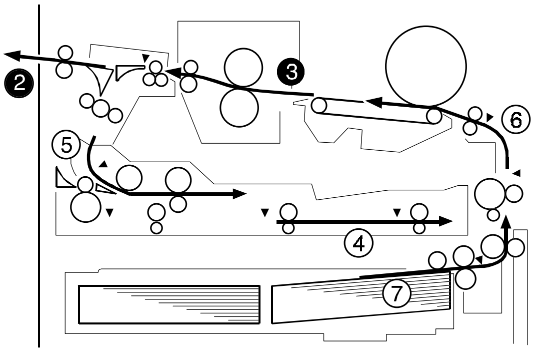
A229D547.WMF

6. The 1st sheet is fed out (1st and 2nd pages printed).
7. The 4th sheet is directed to the duplex unit.
8. The back of the 2nd sheet is printed (4th page).
9. The 5th sheet is fed.



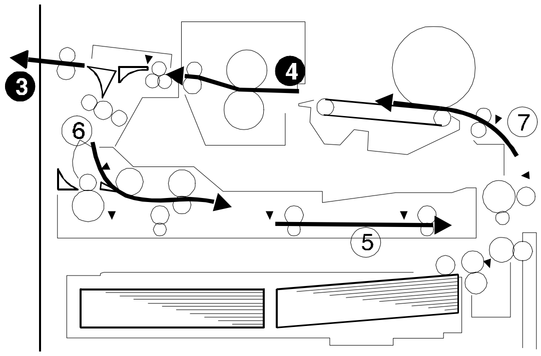
A229D548.WMF

10. The 2nd sheet is fed out (3rd and 4th pages printed).
11. The 5th sheet is printed (9th page) and directed to the duplex unit.
12. The back of the 3rd sheet (6th page) is printed.
13. The 6th sheet is fed and printed (11th page).



A229D549.WMF

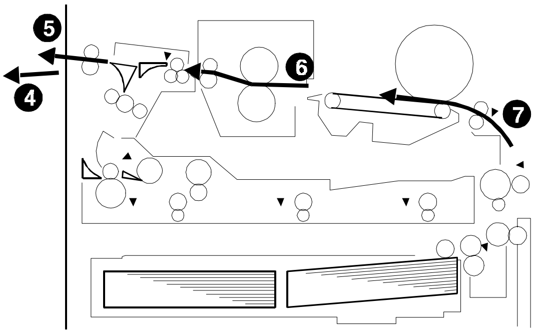
14. The 3rd sheet (5th and 6th pages) is fed out
15. The back of the 4th sheet (8th page) is printed.
16. The 7th sheet is fed and printed (13th page).



A229D583.WMF

17. The back of the 5th sheet (10th page) is printed.

18. The 4th and 5th sheets are fed out (pages 7 to 10).
19. The back of the 6th (12th page) and 7th (14th page) sheets are printed.



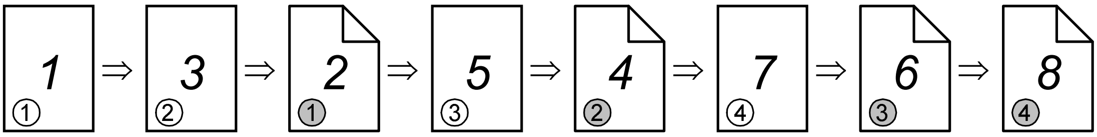
A229D584.WMF

20. The 6th and 7th sheets are fed out (pages 11 to 14).

Longer than A4 / Letter lengthwise

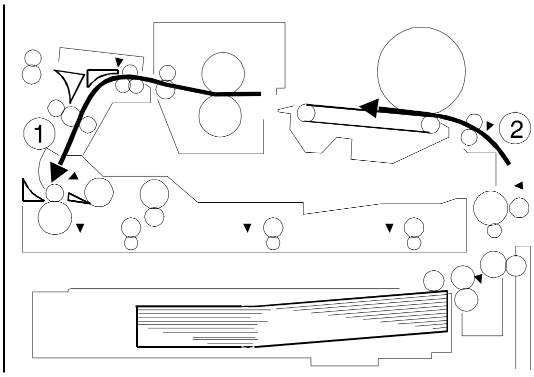
The duplex unit can process two sheets of copy paper

Example: 8 pages. The number [A] in the illustration shows the order of pages. The number [B] in the illustration shows the order of sheets of copy paper (if shaded, this indicates the second side).



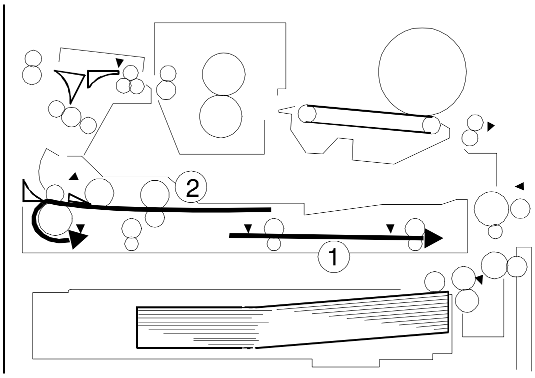
A229D551.WMF

1. The first 2 sheets are fed and printed.
   1) 1st sheet printed (1st page)
   2) 2nd sheet printed (3rd page)



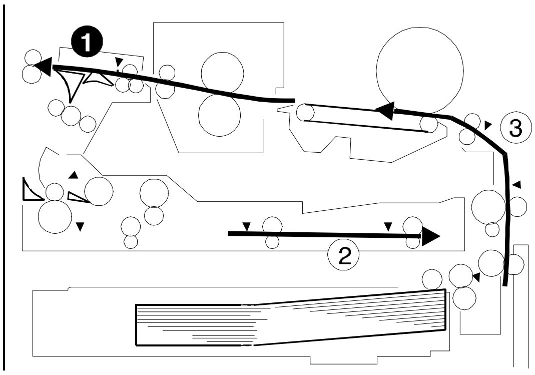
A229D585.WMF

2. The first 2 sheets go into the duplex unit



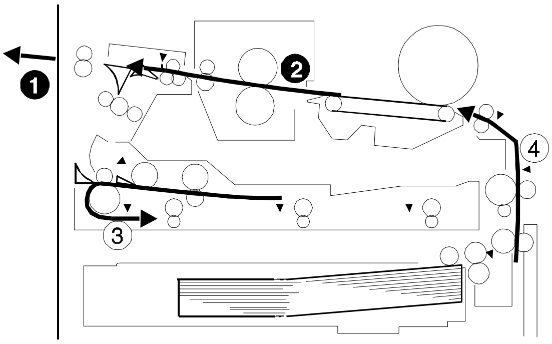
A229D586.WMF

3. The back of the 1st sheet (2nd page) is printed.
4. The 3rd sheet (5th page) is fed and printed.



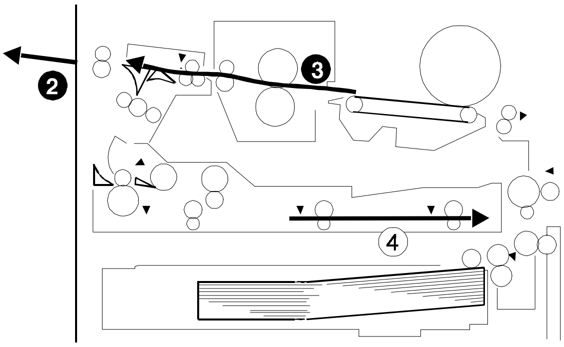
A229D587.WMF

5. The 1st sheet (1st and 2nd pages) is fed out.
6. The back of the 2nd sheet (4th page) is printed.
7. The 4th sheet (7th page) is fed and printed.



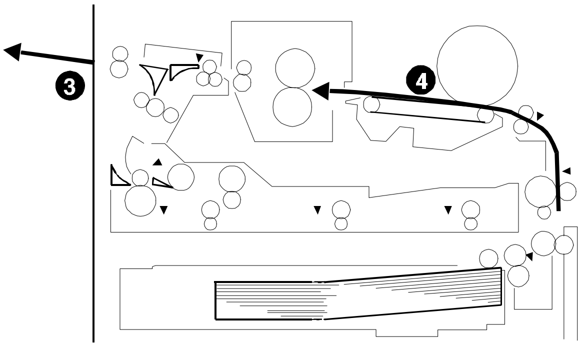
A229D588.WMF

8. The 2nd sheet (3rd and 4th pages) is fed out
9. The back of the 3rd sheet (6th page) is printed.



A229D589.WMF

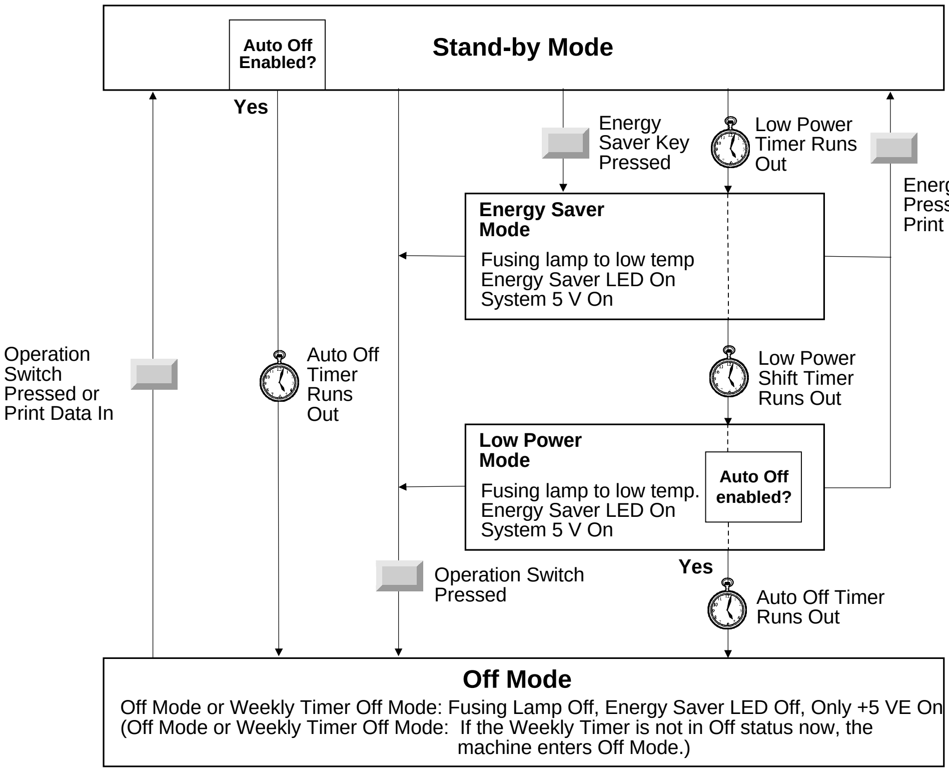
10. The 3rd sheet (5th and 6th pages printed) is fed out.
11. The back of the 4th sheet (8th page) is printed.
12. The 4th sheet (7th and 8th pages) is fed out.



A229D590.WMF

2.11 ENERGY SAVER MODES

2.11.1 OVERVIEW


Auto Off Enabled?
Stand-by Mode
Yes
Energy Saver Key Pressed
Low Power Timer Runs Out
Energy Saver key Pressed or Copy/ Print Operation
Energy Saver Mode
Fusing lamp to low temp
Energy Saver LED On
System 5 V On
Operation Switch Pressed or Print Data In
Auto Off Timer Runs Out
Low Power Shift Timer Runs Out
Low Power Mode
Fusing lamp to low temp.
Energy Saver LED On
System 5 V On
Auto Off enabled?
Yes
Operation Switch Pressed
Auto Off Timer Runs Out
Off Mode
Off Mode or Weekly Timer Off Mode: Fusing Lamp Off, Energy Saver LED Off, Only +5 VE On
(Off Mode or Weekly Timer Off Mode: If the Weekly Timer is not in Off status now, the machine enters Off Mode.)

A229D647.WMF

When the machine is not used, the energy saver function reduces power consumption by decreasing the fusing temperature.

This machine has three energy saver modes.

1) Energy saver mode
2) Low power mode
3) Off mode (this has two modes, Auto Off Mode and Weekly Timer Off Mode)

These modes are controlled by the following UP modes.

- Low power timer: The machine enters energy saver mode when this runs out
- Low power shift timer: The machine enters low power mode when this runs out
- Auto off timer: The machine enters auto off mode when this runs out
- Weekly timer programming: Programs a timer for the machine to switch itself on and off (this is for Weekly Timer Off Mode)
- Auto off mode disabling (User Tools – System Setting – Count Manager - AOF) If auto off mode is disabled, the machine will never enter auto off mode. The fusing lamps will always stay on, but the machine will still be able to enter energy saver and low power modes.

The way that the machine operates depends on the combination of installed equipment (copier only, copier/printer).

2.11.2 ENERGY SAVER MODE

Entering energy saver mode

The machine enters energy saver mode when one of the following is done.

- The low power timer runs out after the end of a job.
  NOTE: If the low power timer is 0, the machine will wait for the low power shift timer to run out, and then it will go straight to low power mode (see Low Power Mode).
- The Clear Mode/Energy Saver Key is held down for a second.

What happens in energy saver mode

When the machine enters energy saver mode, the fusing lamp drops to 182 °C, and the operation panel indicators are turned off except for the Energy Saver LED and the Power LED. There is only one energy saver level.

If the CPU receives the image print out command from an application (e. g. to print data from a PC), the fusing temperature rises to print the data. However, the operation panel stays off.

Return to stand-by mode

If one of the following is done, the machine returns to stand-by mode:

- The Clear Mode/Energy Saver Mode key is pressed
- Any key on the operation panel is pressed
- An original is placed in the ADF
- The ADF is lifted
- A sheet of paper is placed in the by-pass feed table

The recovery time from energy saver to rise the fusing temperature is about **0 s**.

NOTE: The polygon motor needs 10 seconds to reach the correct speed.

Mode	Operation Switch	Energy Saver LED	Fusing Temp.	System +5V	Main Power LED
Energy Saver	On	On	182 °C	On	On

2.11.3 LOW POWER MODE

Entering low power mode

The low power shift timer runs out after the end of a job.

What happens in low power mode

The fusing lamp drops to a certain temperature, that depends on the setting of SP5-920 (the default is 177 °C). The other conditions are the same as for energy saver mode.

Return to stand-by mode

The machine returns to standby mode in exactly the same way as from energy saver mode.

The recovery time from low power mode depends on the setting of SP5-920. The default (from 177 °C) is about 20 seconds.

Recovery Time	Operation Switch	Energy Saver LED	Fusing Temp.	System +5V	Main Power LED
About 20 seconds	On	On	177 °C	On	On

2.11.4 OFF MODE

Auto off mode has two separate modes.

- Auto Off Mode (Sleep mode)
- Weekly Timer Off Mode

Off Mode (Sleep Mode)

Entering off mode

The machine enters off mode when one of the following is done.

- The auto off timer runs out after the end of a job
- The operation switch is pressed to turn the power off

What happens in off mode

When the machine enters auto off mode, the operation switch turns off automatically. The fusing lamp and all dc supplies except +5VE (+5V for energy saver mode) turns off. At this time, only the main power LED is lit.

Operation Switch	Energy Saver LED	Fusing Temp.	System +5V	Main Power LED
Off	Off	Room Temp. (Fusing lamp off)	Off	On

NOTE: Only +5VE is supplied to the SBICU.
LED (+5V) is supplied to the operation panel from the SBICU.

Returning to stand-by mode

The machine returns to stand-by mode when the operation switch is pressed.

Printing incoming data

If the machine receives print data from a PC, the fusing temperature rises to print the data. However, the operation panel stays off. After completing the print job, the machine returns to off mode (sleep mode).

Weekly Timer Off Mode

Weekly timer

The user can program ‘on periods’ and ‘off periods’ for each day of the week.

Entering weekly timer off mode

The machine enters this mode when:

- The auto off timer runs out after the end of a job, and the weekly timer has already reached the start of an off period
- The operation switch is pressed to turn the power off, and the weekly timer has already reached the start of an off period
- The weekly timer reaches the start of an off period while in Off Mode.

What happens in weekly timer off mode

When the machine enters this mode, the operation switch turns off automatically. The fusing lamp and all dc supplies except +5VE (+5V for energy saver mode) turn off. At this time, only the main power LED is lit.

Operation Switch	**Energy Saver LED**	**Fusing Temp.**	**System +5V**	**Main Power LED**
Off	Off	Room Temp. (Fusing lamp off)	Off	On

NOTE: Only +5VE is supplied to the SBICU.
LED (+5V) is supplied to the operation panel from the SBICU.

Returning to stand-by mode

If a weekly timer code (Key Operator Code for Off Setting - UP mode) is registered, the machine returns to stand-by mode when the operation switch is pressed and the weekly timer code is entered.

If a weekly timer code is not registered, the machine returns to stand-by mode when the operation switch is pressed.

Printing received data

If no weekly timer code is registered:

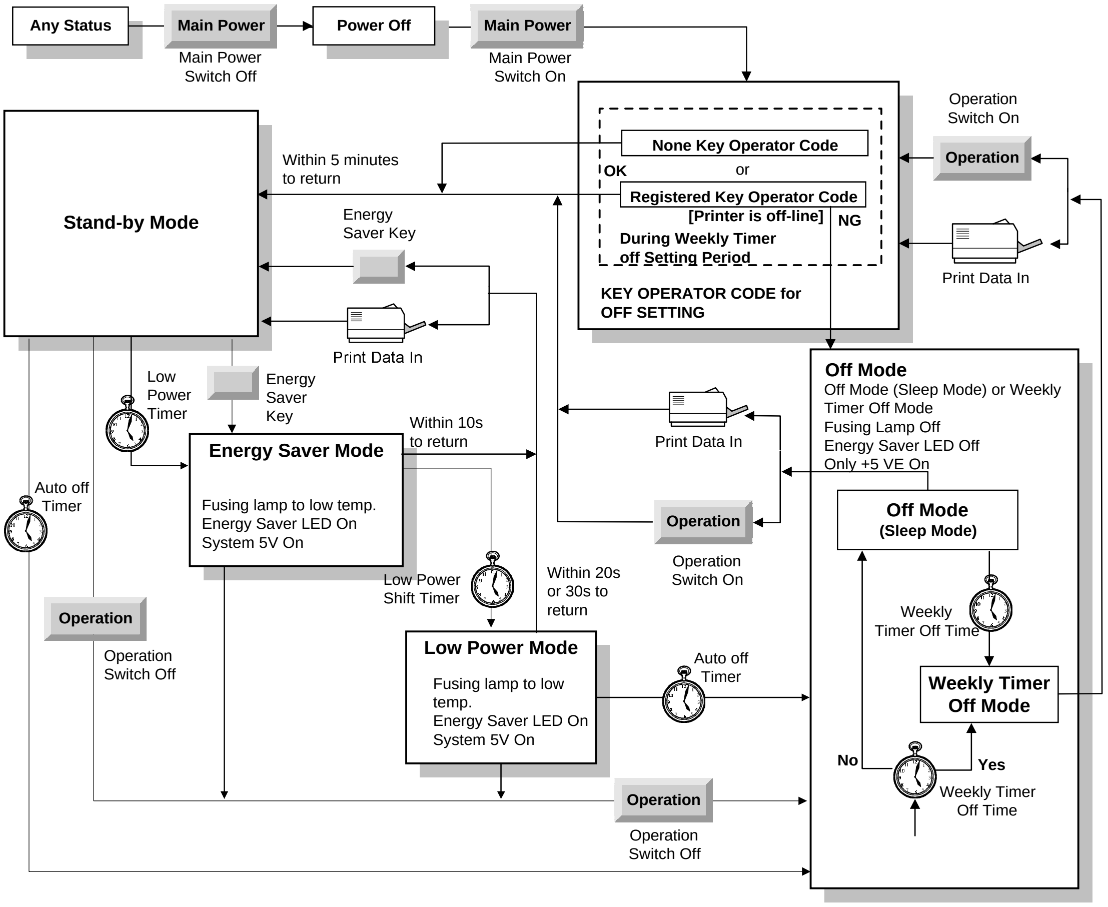
If the machine receives print data from a PC, the fusing temperature rises to print the data. However, the operation panel stays off. After completing the print job, the machine returns to weekly timer off mode.

If a weekly timer code is registered:

When print data is sent from a PC, the printer stays off-line. After someone enters the weekly timer code, the printer will go on-line and print the data.

2.11.5 SUMMARY

For reference, the following flow chart summarizes the various energy saver modes, and their entry and exit conditions.


Any Status
Main Power
Main Power Switch Off
Power Off
Main Power
Main Power Switch On
Stand-by Mode
Within 5 minutes to return
None Key Operator Code
OK
or
Registered Key Operator Code
[Printer is off-line]
NG
During Weekly Timer off Setting Period
KEY OPERATOR CODE for OFF SETTING
Operation Switch On
Operation
Print Data In
Energy Saver Key
Print Data In
Low Power Timer
Energy Saver Key
Within 10s to return
Energy Saver Mode
Fusing lamp to low temp.
Energy Saver LED On
System 5V On
Auto off Timer
Print Data In
Operation
Operation Switch On
Off Mode
Off Mode (Sleep Mode) or Weekly Timer Off Mode
Fusing Lamp Off
Energy Saver LED Off
Only +5 VE On
Off Mode
(Sleep Mode)
Low Power Shift Timer
Within 20s or 30s to return
Operation
Operation Switch Off
Low Power Mode
Fusing lamp to low temp.
Energy Saver LED On
System 5V On
Auto off Timer
Weekly Timer Off Time
Weekly Timer Off Mode
No
Yes
Weekly Timer Off Time
Operation
Operation Switch Off

A229D649.WMF

3. INSTALLATION PROCEDURE

3.1 INSTALLATION REQUIREMENTS

3.1.1 ENVIRONMENT

1. Temperature Range: 10°C to 32°C (50°F to 89.6°F)
2. Humidity Range: 15% to 80% RH
3. Ambient Illumination: Less than 1,500 lux (do not expose to direct sunlight or strong light.)
4. Ventilation: Room air should turn over at least 3 times per hour
5. Ambient Dust: Less than 0.10 mg/m^3 (2.7×10^{-6} oz/yd^3)
6. If the place of installation is air-conditioned or heated, do not place the machine where it will be:
   1) Subjected to sudden temperature changes
   2) Directly exposed to cool air from an air-conditioner
   3) Directly exposed to heat from a heater
7. Do not place the machine where it will be exposed to corrosive gases.
8. Do not install the machine at any location over 2,000 m (6,500 feet) above sea level.
9. Place the copier on a strong and level base.
10. Do not place the machine where it may be subjected to strong vibrations.

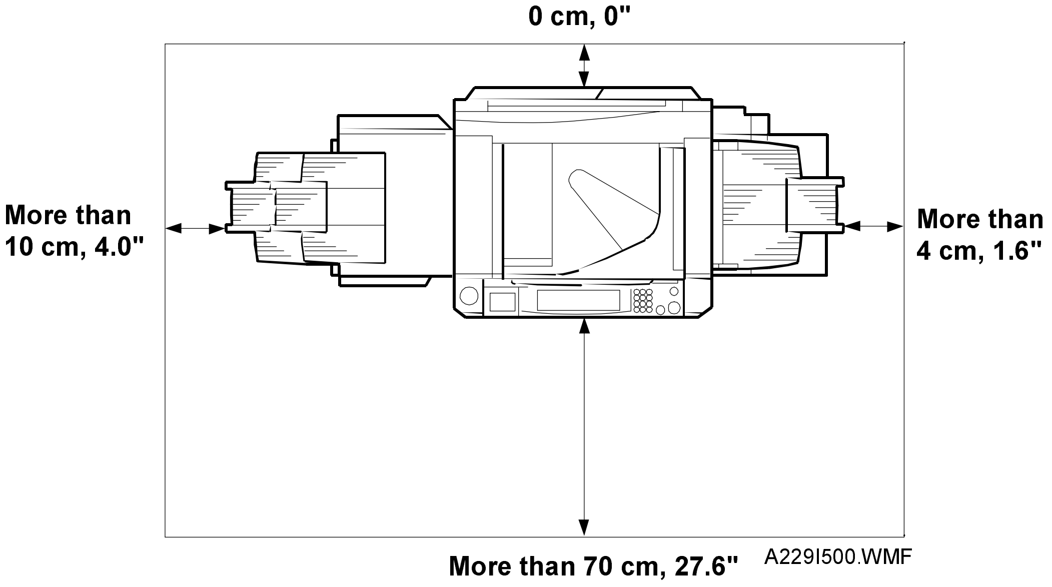
3.1.2 MACHINE LEVEL

1. Front to back: Within 5 mm (0.2") of level
2. Right to left: Within 5 mm (0.2") of level

NOTE: The machine legs may be screwed up or down in order to level the machine. Set a carpenter's level on the exposure glass.

3.1.3 MINIMUM SPACE REQUIREMENTS

Place the copier near the power source, providing clearance as shown below. The same amount of clearance is necessary when optional equipment is installed.


0 cm, 0"
More than 10 cm, 4.0"
More than 4 cm, 1.6"
More than 70 cm, 27.6"
A229I500.WMF

3.1.4 POWER REQUIREMENTS

⚠CAUTION

1. **Make sure the plug is firmly inserted in the outlet.**
2. **Avoid multi-wiring.**
3. **Do not set anything on the power cord.**

1. Input voltage level:	120 V/60 Hz: More than 20 A 220~240 V/50-60 Hz: More than 10 A
2. Permissible voltage fluctuation:	10%

3.2 COPIER (A229)

3.2.1 ACCESSORY CHECK

Check the quantity and condition of the accessories in the box against the following list:

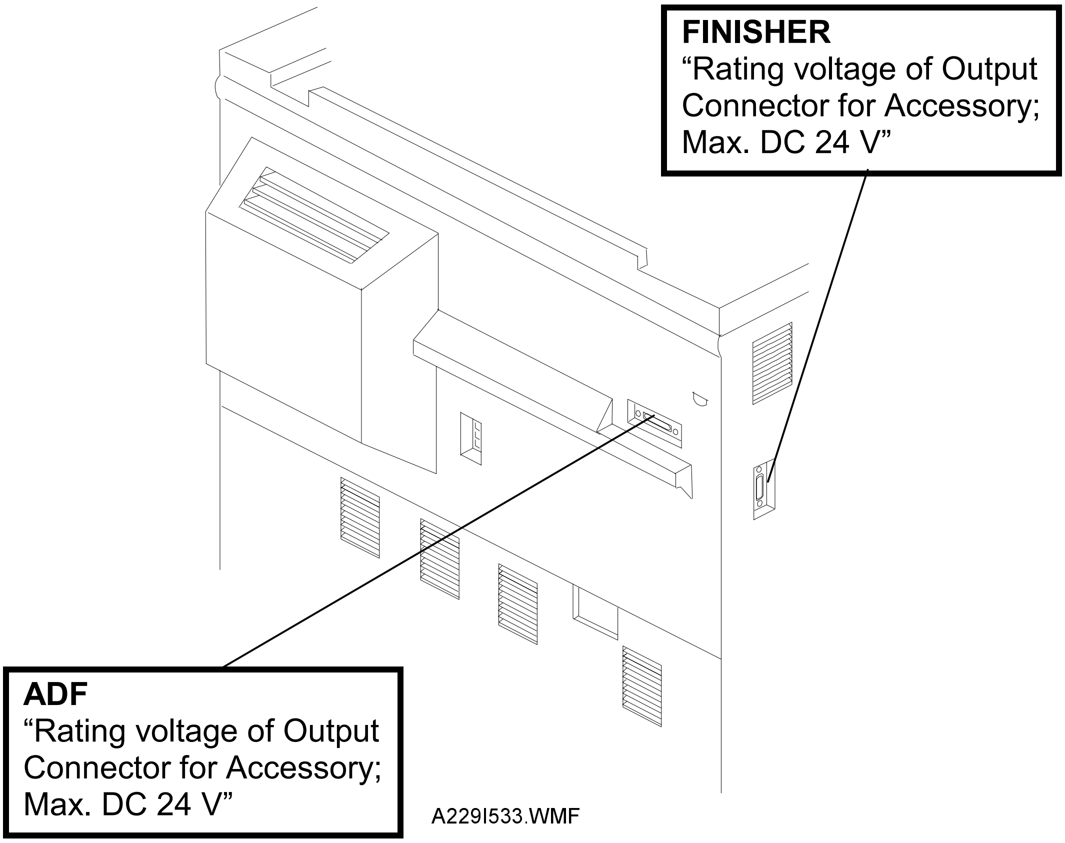
Description	Q'ty
1. Model Name Decal (-10, -22 machines)	1
2. Operation Instructions – English (-10, -22, -26, -29 machines)	1
3. Operation Instructions – Chinese (-62 machines)	1
4. NECR with Envelope – English (-17 machines)	1
5. NECR – Multi-language (-27, -29, -62 machines)	1
6. User Survey Card (-17 machines)	1
7. Operation Panel Brand Decal (-22 machines)	1
8. Paper Size Decal	1
9. Decal – Face Up	1
10. Original Exit Tray	1
11. Tapping Screw – M4 x 8	3
12. Plastic Mylar – Large	2
13. Plastic Mylar – Small	1
14. Leveling Shoes	2
15. Operation Instruction Holder	1

3.2.2 INSTALLATION PROCEDURE

⚠CAUTION

Rating voltage for Peripherals

Make sure to plug the cables into the correct sockets.

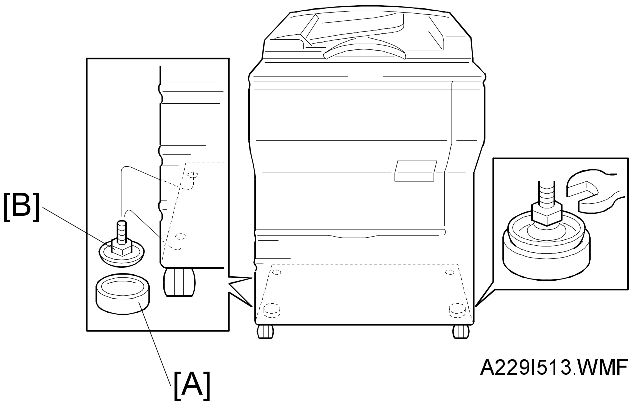


FINISHER
"Rating voltage of Output Connector for Accessory; Max. DC 24 V"

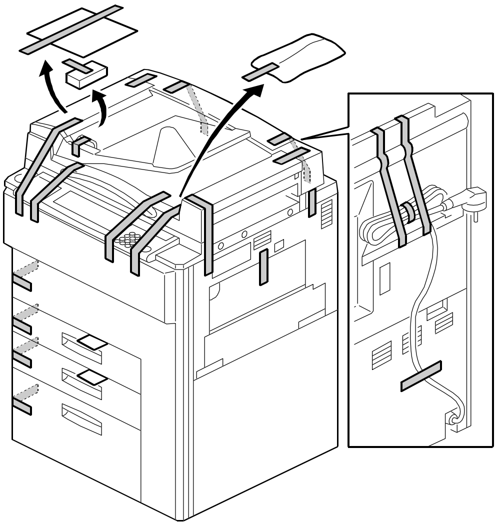
ADF
"Rating voltage of Output Connector for Accessory; Max. DC 24 V"

A229I533.WMF

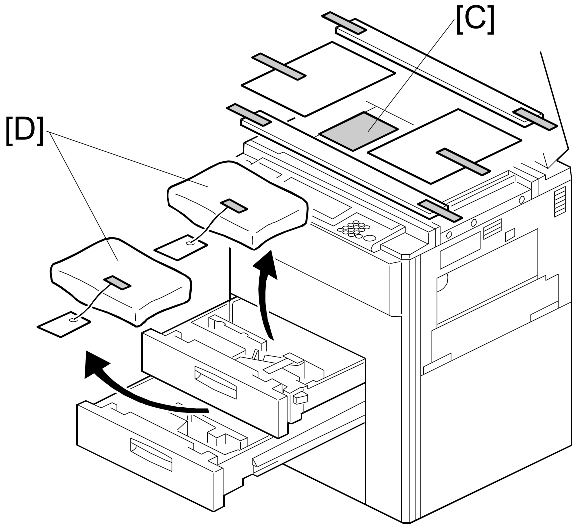
NOTE: Since the installation procedure is not packed with the copier as an accessory, always bring this manual with you.



A229I513.WMF



A229I517.WMF



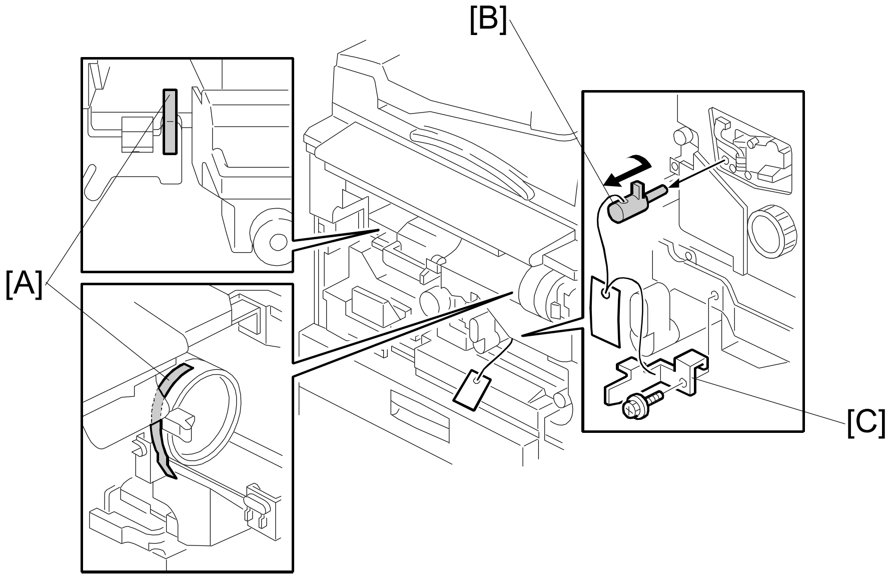
A229I518.WMF

⚠CAUTION

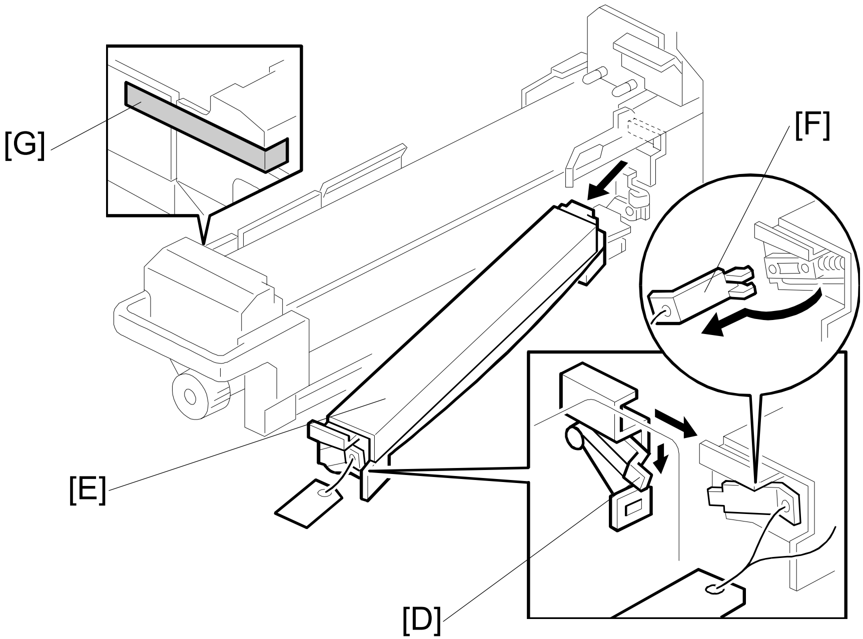
Keep the power cord unplugged when starting the following procedure.

NOTE: 1) Keep the shipping retainers after installing the machine. They will be reused if the machine is moved to another location in the future.
2) Insert the levelling shoes [A] under the levelling feet [B] at the front, and level the machine before starting the installation. (The levelling feet [B] can be screwed up or down.) Extra levelling shoes (AH013008) and levelling feet (AH011004) are available as spare parts.

1. Remove all strips of tape as shown above.
2. Keep the factory setting data sheet [C] for future usage.
3. Draw out trays 1 and 2, and take out the accessory items [D] placed inside.

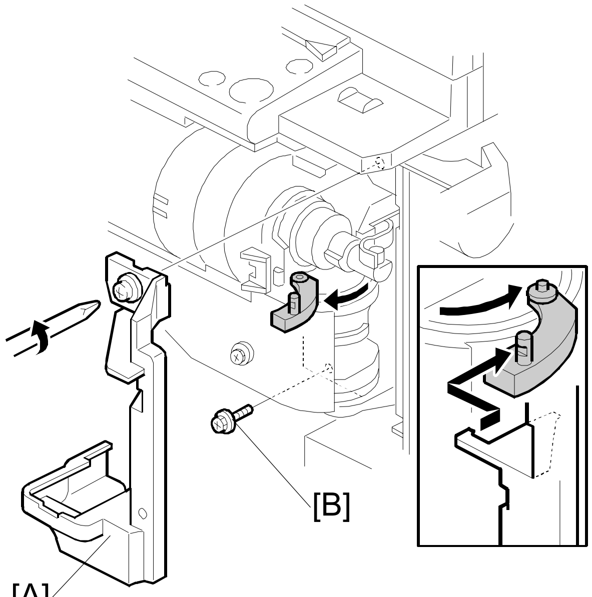


A229I520.WMF

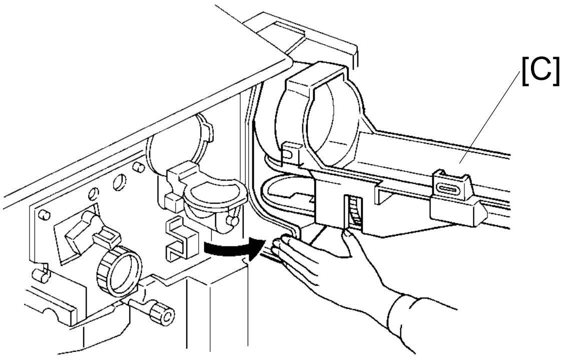


A229I102.WMF

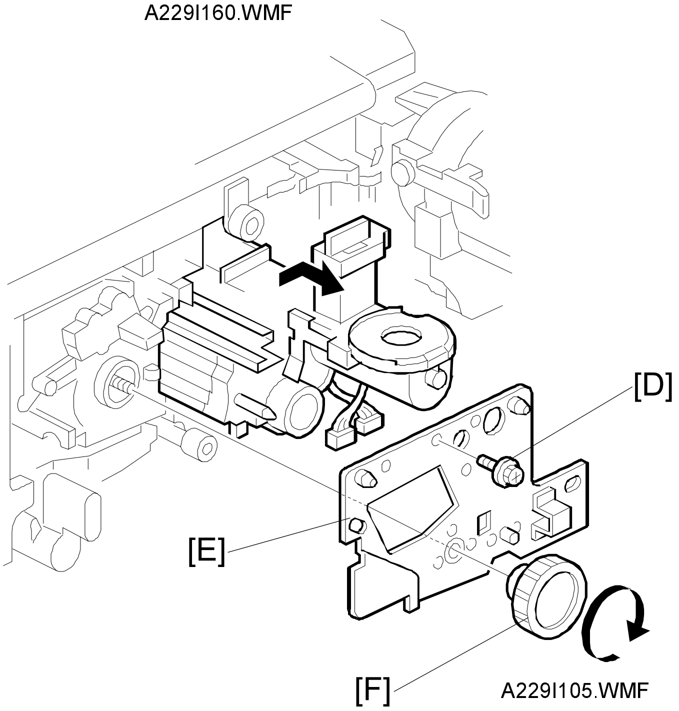
4. Open the front cover and remove the strips of tape [A].
5. Remove the blade release pin [B] together with the transfer belt lock plate [C] (1 screw).
6. Pull out the fusing unit. Lower the lever [D], remove the oil supply unit [E], and remove the front and rear clamps [F]. Reinstall the oil supply unit and push in the fusing unit. Remove the strip of filament tape [G] from the fusing unit.



A229I160.WMF

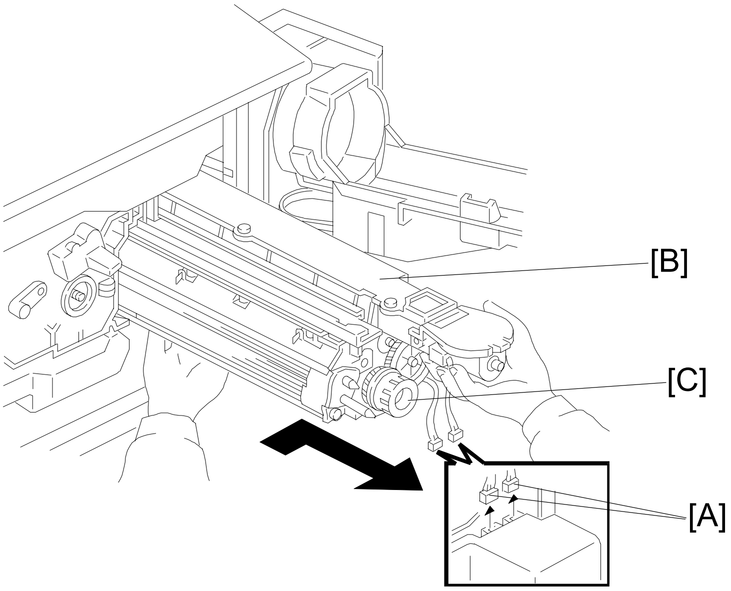


A229I515.PCX

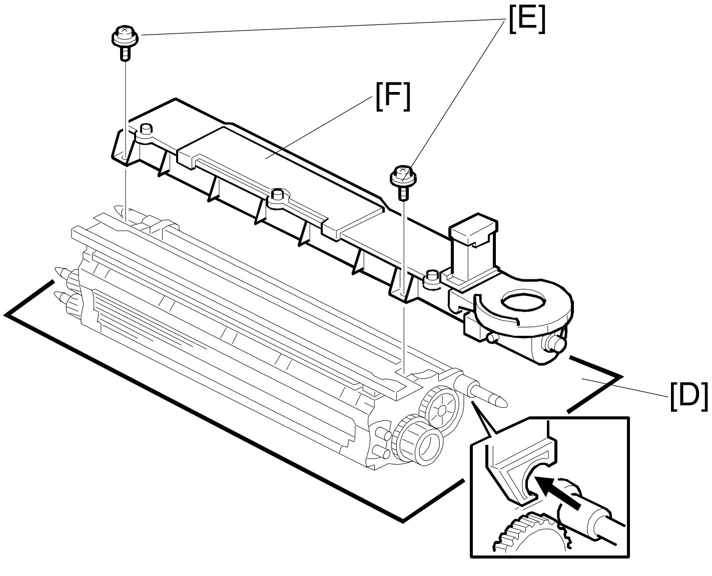


A229I105.WMF

7. Remove the shutter inner cover [A] (1 screw).
8. Remove the screw [B] securing the toner bottle holder.
9. Swing out the toner bottle holder [C].
10. Remove the screw [D] that holds the drum stay [E].
11. Remove the drum stay knob [F] and the drum stay (turn the knob clockwise to remove it).

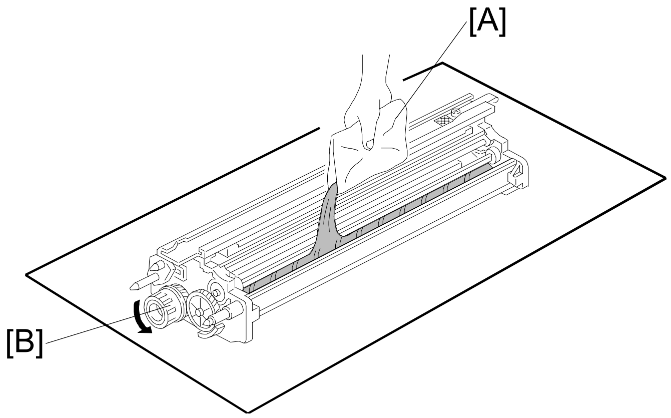


A229I501.WMF

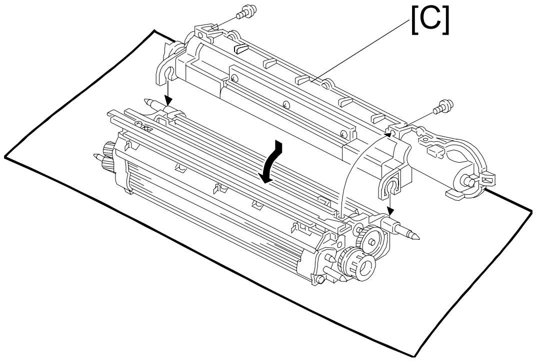


A229I529.WMF

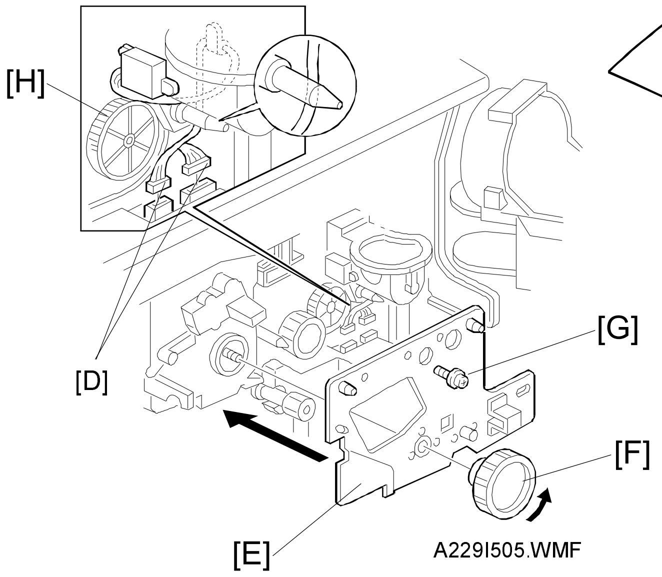
12. Disconnect two connectors [A].
13. Pull out the development unit [B] as shown.
    NOTE: 1) To prevent scratches on the drum, push the development unit to the right while pulling it out.
    2) When pulling out the development unit, do not pull the knob [C].
    3) Place the development unit on a clean sheet of paper [D], to prevent foreign matter from being attracted to the sleeve rollers.
14. Remove two screws [E] that hold the toner hopper [F].
15. Remove the toner hopper by lifting it out.



A229I503.WMF

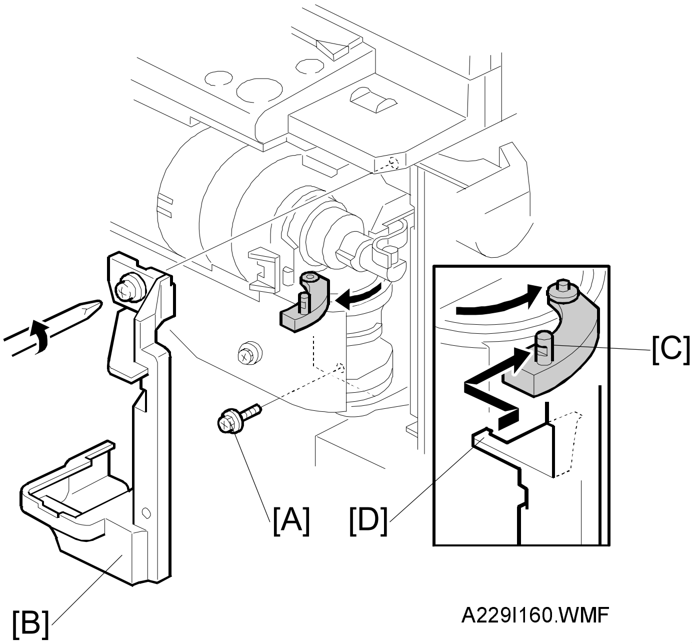


A229I504.WMF

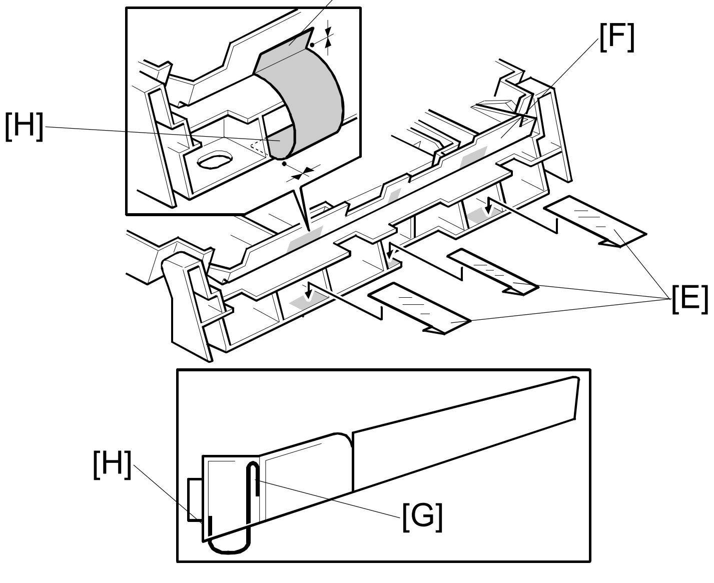


A229I505.WMF

16. Pour in one pack of developer [A] while turning the knob [B]. Distribute the developer evenly along the development unit.
17. Attach the toner hopper [C] to the development unit (2 screws).
18. Install the development unit in the machine.
19. Connect two connectors [D].
20. Attach the drum stay [E] and attach the drum stay knob [F] and one screw [G].
    NOTE: When installing the drum stay, be careful not to pinch the cables, and keep the cables away from the gear [H].



A229I160.WMF

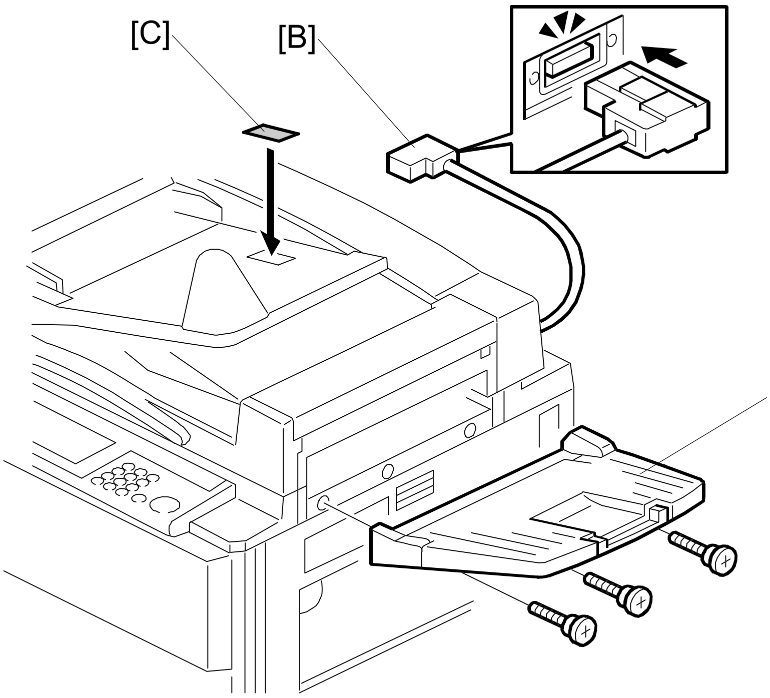


A229I153.WMF

21. Set the toner bottle holder in position (1 screw [A]) and attach the shutter inner cover [B] (1 screw).
    NOTE: When attaching the shutter cover, make sure that the pin [C] in the shutter engages the stopper [D].

22. Install a toner bottle by following the instructions on the decal.

23. Attach the three plastic mylar strips [E] to the back of the original exit tray [F].
    NOTE: 1) The small mylar strip should be in the middle.
    2) The mylar strips must be attached to the tray side [G] first, then to the base copier side [H].



A229I521.WMF

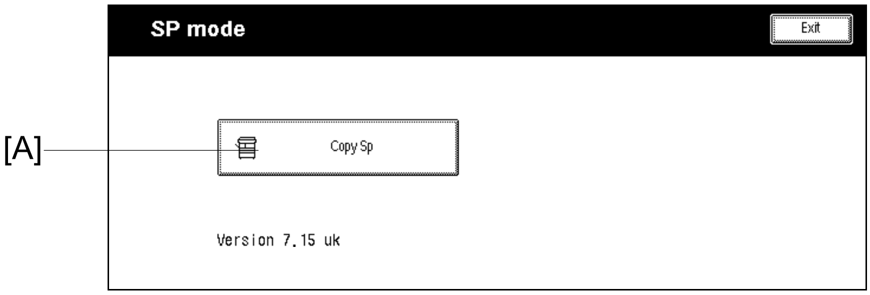
24. Install the original exit tray [A] (3 screws).
25. Connect the ARDF connector [B] to the socket at the rear of the copier.
26. Attach the face up decal [C] to the feed tray as shown.
27. Plug in the power cord, then turn on the main power switch and the operation switch. The machine automatically enters the process control data initial setting mode. This takes about 5 minutes.

NOTE: Do not turn off the main switch during the process control data initial setting mode.

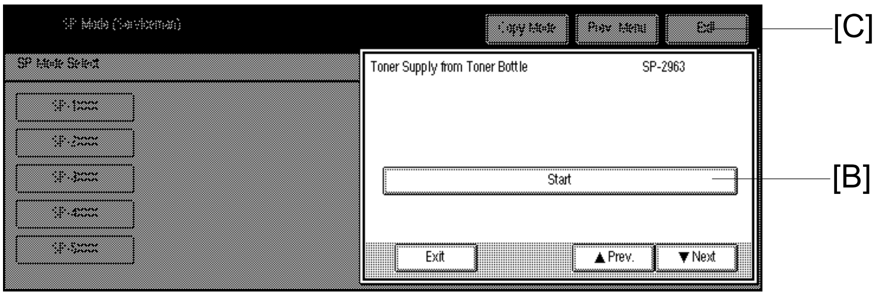
Do not make any copies until after SP2963 has finished in step 29.

28. Enter SP mode as follows:
    1) Press the clear modes key.
    2) Enter “107”
    3) Hold down the clear/stop key for more than 3 seconds.

⊘ → ① → ⓪ → ⑦ → C/⊘


SP mode
Exit
[A]
Copy Sp
Version 7.15 uk

A229I522.TIF


SP Mode (Serviceman)
Copy Mode
Prev. Menu
Exit
[C]
SP Mode Select
SP-1XXX
SP-2XXX
SP-3XXX
SP-4XXX
SP-5XXX
Toner Supply from Toner Bottle
SP-2963
Start
[B]
Exit
▲Prev.
▼Next

A229I523.TIF

29. Select “Copy SP” [A] on the LCD, and perform the initial setting as follows:
    1) Enter “2963” using the numeric keys.
    2) Press the “Enter” key.
    3) Press the “Start” key [B] on the LCD.

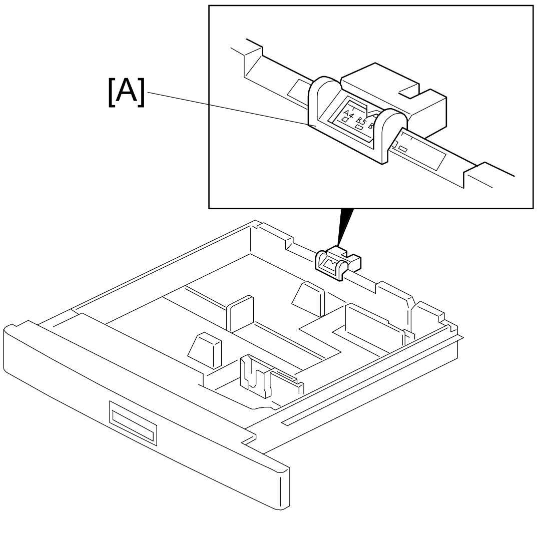
    NOTE: This SP mode performs the TD initial setting, then the forced toner supply. It will stop automatically when both procedures have finished.
30. Initialize the mechanical counter using SP7-825.
31. If necessary, select the correct display language (SP5-009).
32. Press the “Exit” key [C] on the LCD to exit SP mode.
33. Change the paper size for all paper trays to suit the customer’s requests. (See section 3.3 “Paper Size Change” for details.)
34. Attach the appropriate paper size decals, which are included as accessories, to each paper feed tray.
35. Check copy quality and machine operation.

3.3 PAPER SIZE CHANGE

If the customer requests, change the paper size as follows.

3.3.1 550-SHEET PAPER TRAY (TRAY 2)

NOTE: At the factory, this tray is set up for A3 or DLT depending on the machine destination code.



A229I526.WMF

Slide the paper size slider [A] to the paper size indication that matches the paper size in the tray. The following paper sizes can be selected with the paper size slider.

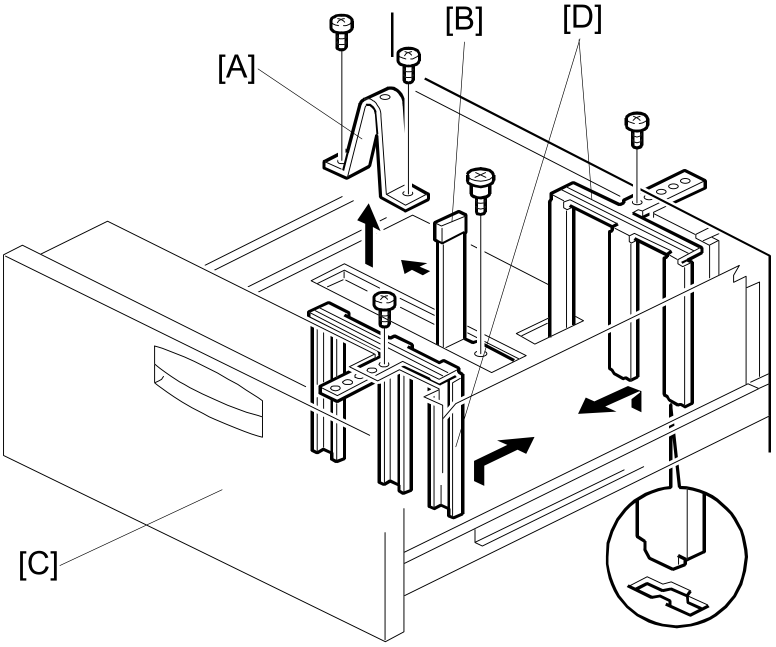
A4/A3 Version	LT/DL Version
A3 (lengthwise)	11" x 17"
A4 (lengthwise)	81/2" x 14"
A4 (sideways)	81/2" x 11"
A5 (sideways)	11" x 81/2"
81/4" x 13" (lengthwise)	81/2" x 51/2"
81/2" x 13" (lengthwise)	8" x 101/2"
✻	11" x 15"
–	10" x 14"
–	8" x 10"
–	8" x 13"
–	✻

NOTE: When the paper size slider is set at the " ✻ " position, a wider range of paper sizes can be selected using the System Settings in the User Tools.

3.3.2 1,500-SHEET PAPER TRAY (TRAY 3)

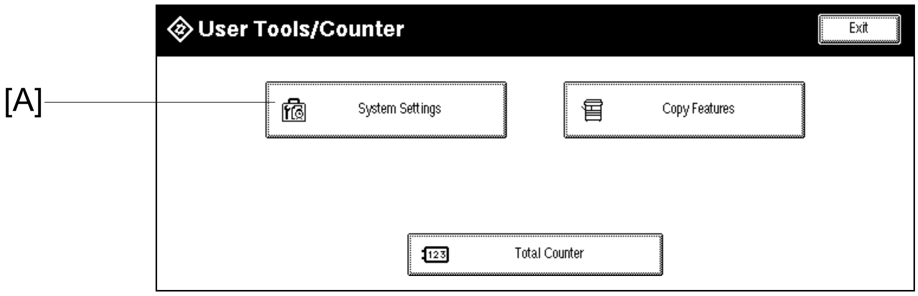
NOTE: 1) At the factory, this tray is set up for A4 or LT sideways depending on the machine destination code.

2) A protection bracket [A] on the guide rail of the end fence [B] prevents users from putting stacks of paper in the empty space (this would lead to machine damage). If the user requests paper which is larger than A4 or LT sideways, this bracket must be removed (2 screws).

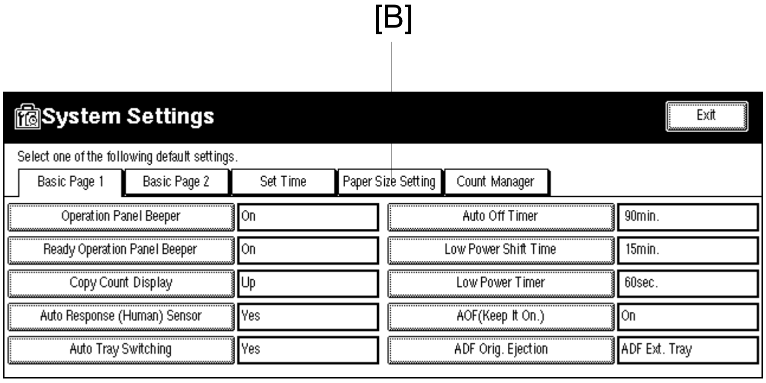


A229I519.WMF

1. Draw out the third feed tray [C].
2. Change the position of the front and the rear side fences [D] (1 screw each) and the end fence [B] (one screw) to match the required paper size.
3. Remove the protection bracket if the paper size will be larger than A4 sideways.


[A]
User Tools/Counter
Exit
System Settings
Copy Features
Total Counter

A229I525.TIF


[B]
System Settings
Exit
Basic Page 1
Basic Page 2
Set Time
Paper Size Setting
Count Manager

Select one of the following default settings.

Operation Panel Beeper	On	Auto Off Timer	90min.
Ready Operation Panel Beeper	On	Low Power Shift Time	15min.
Copy Count Display	Up	Low Power Timer	60sec.
Auto Response (Human) Sensor	Yes	AOF(Keep It On.)	On
Auto Tray Switching	Yes	ADF Orig. Ejection	ADF Ext. Tray

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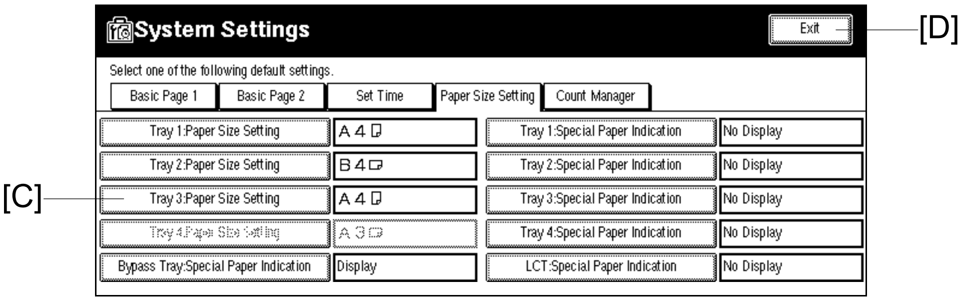

[C]
[D]
System Settings
Exit
Basic Page 1
Basic Page 2
Set Time
Paper Size Setting
Count Manager

Select one of the following default settings.

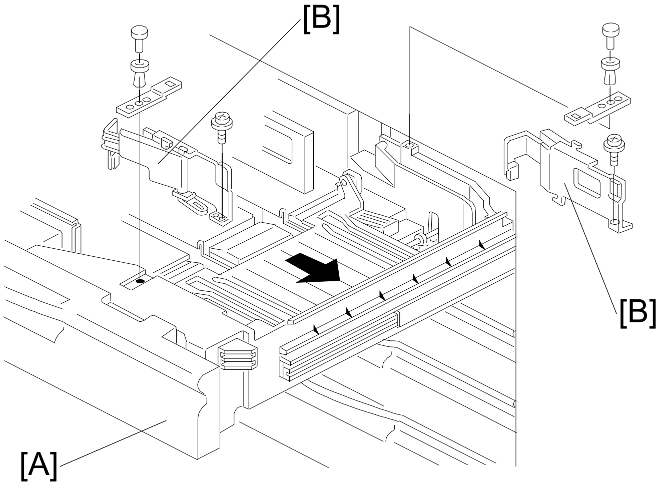
Tray 1:Paper Size Setting	A4	Tray 1:Special Paper Indication	No Display
Tray 2:Paper Size Setting	B4	Tray 2:Special Paper Indication	No Display
Tray 3:Paper Size Setting	A4	Tray 3:Special Paper Indication	No Display
Tray 4:Paper Size Setting	A3	Tray 4:Special Paper Indication	No Display
Bypass Tray:Special Paper Indication	Display	LCT:Special Paper Indication	No Display

A229I527.TIF

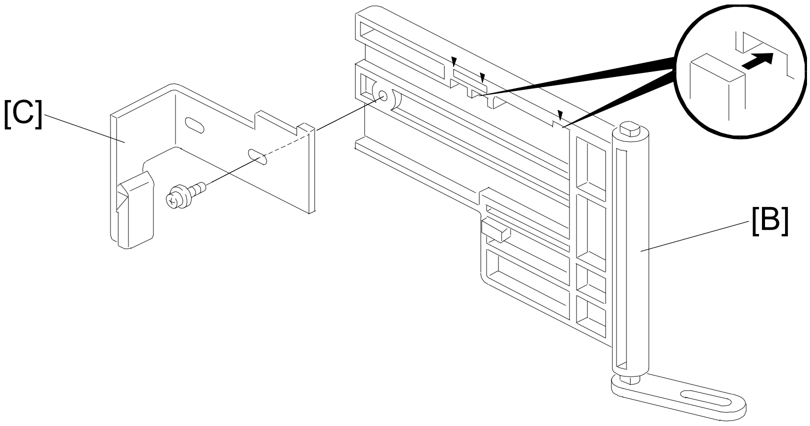
4. Press the “User Tools/Counter” key.
5. Press the “System Settings” key [A].
6. Press the “Paper Size Setting” key [B], then press the “Tray 3: Paper Size Setting” key [C]. Then press the appropriate paper size key.
7. Press the “Exit” key [D] twice to leave SP mode.
8. Check the copy quality and machine operation.

3.3.3 TANDEM FEED TRAY PAPER SIZE CHANGE (TRAY 1)

NOTE: At the factory, this tray is set up for A4 or LT sideways. Only B5, A4, or LT sideways paper can be used for tandem feed. If the user requests other paper sizes than these, this tray will be used as a fixed tray.



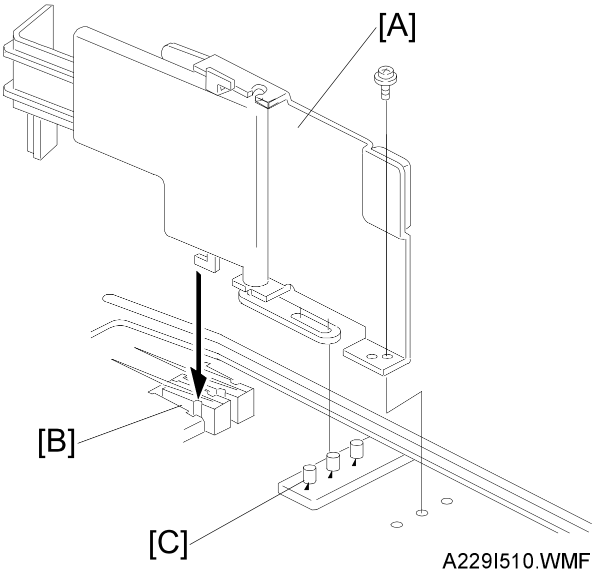
A229I508.WMF



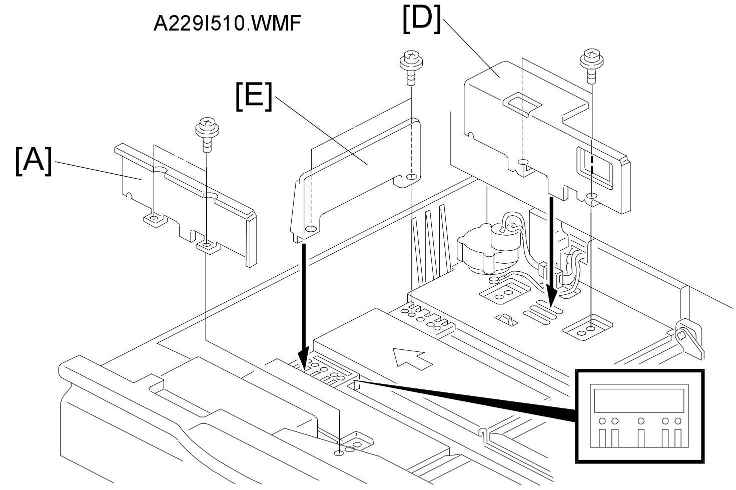
A229I509.WMF

- To use as a tandem feed tray for A4, LT, or B5 sideways paper -

1. Draw out the tandem feed tray [A].
2. Remove the rear and front side fences [B] (one screw and one pushlock each) on the right tandem tray.
3. Re-position the end fences [C] on both rear and front side fences (1 screw each) to match the required paper size.

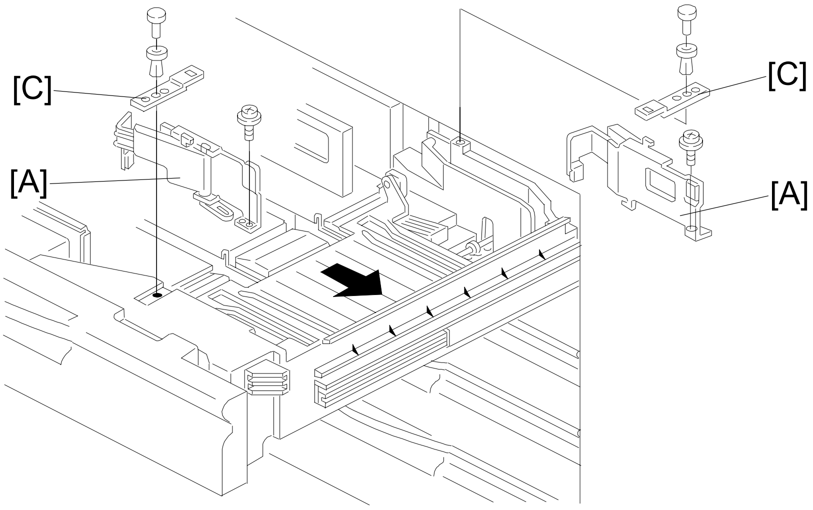


A229I510.WMF

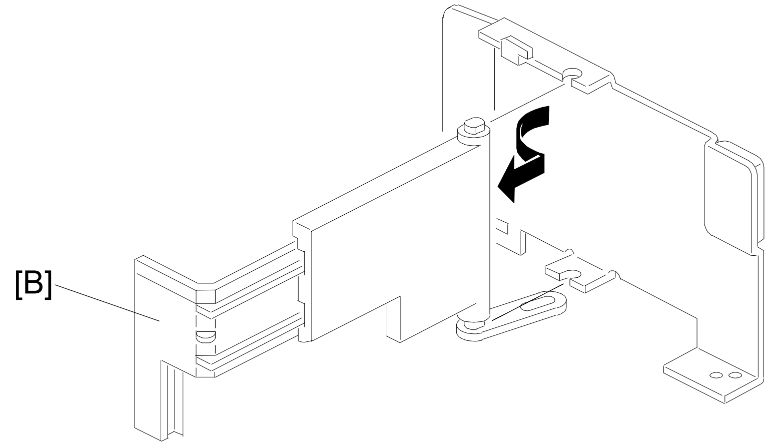


A229I511.WMF

4. Re-install both side fences [A] in the appropriate position for the required paper size, as shown.
   NOTE: The position of the side fence holders [B] and the pins [C] on the rack gear is different for each paper size (from the outside pin: A4, 11", B5).
5. Change the position of the front and rear side fences [D] (2 screws each) and end fence [E] (2 screws) on the left tandem tray to match the required paper size.
6. Enter System Settings in User Tools, and select the paper size that you just set the fences up for.



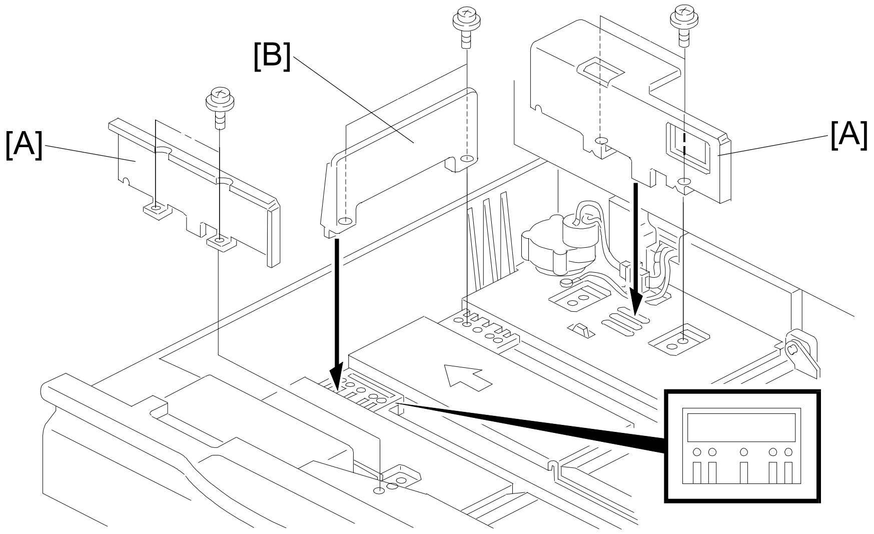
A229I508.WMF



A229I512.WMF

- To used as a fixed tray for paper longer than A4/Letter sideways -

1. Draw out the tandem feed tray.
2. Remove the rear and the front side fences [A] (1 screw and 1 push-lock pin each) on the right tandem tray.
3. Remove the end fences [B] from both the rear and the front side fences (2 screws each).
   NOTE: It is not necessary to re-install the end fences.
4. Install both side fences in the appropriate position for the required paper size (one screw and one lock pin for each side fence).
   NOTE: Support plates [C] are used only for A4, B5, and letter lengthwise sizes. Keep the end fences and support plates for future use.



A229I511.WMF

5. Change the position of the front and rear side fences [A] (2 screws each) and end fence [B] (2 screws) of the left tandem tray to match the required paper size.
6. Enter System Settings in User Tools, and select the paper size that you just set the fences up for.

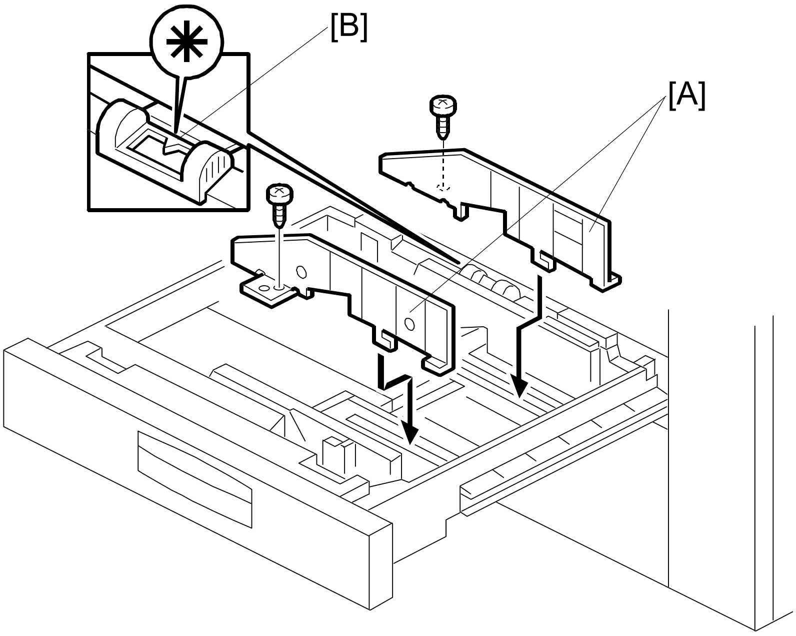
3.3.4 OPTIONAL LCT

Refer to Side Fence Position Change in the LCT service manual.

3.3.5 CHANGING THE UNIVERSAL TRAY PAPER-SIZE

At the factory, the universal paper tray is set to A4/81/2" x 11" sideways. Normally, the customer changes the paper size by following the operating instructions.

Only when the customer needs A5/51/2" x 81/2" (lengthwise) duplex copies does a service representative need to change the paper size. In this case, proceed as follows:



A229I535.WMF

1. Install the front and rear side fences [A] according to the paper size (2 screws).
   Front fence: A0966549
   Rear fence: A0966550
   Binding self tapping screw – M4 x 8: 04140082B
2. Change the position of the size sensor slider [B] to the asterisk position.
3. Enter SP mode (No. 5112) and select “Yes” (non-standard paper size can be input for tray 2.)
4. Select the paper size (A5/51/2" x 81/2" lengthwise paper size) using an UP mode.

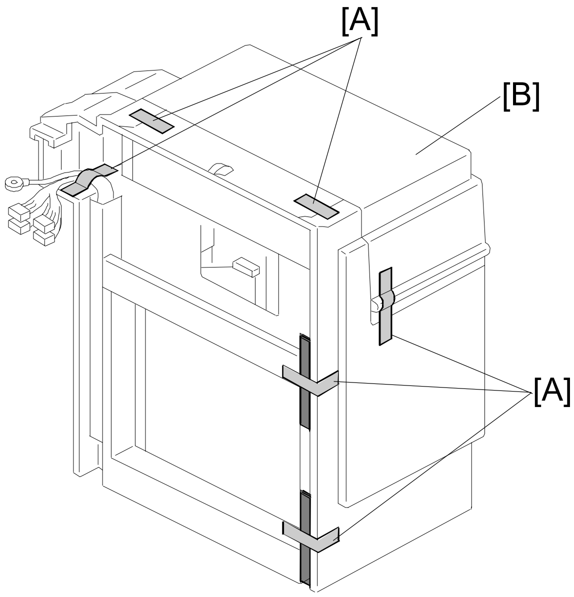
3.4 LCT (A698)

3.4.1 ACCESSORY CHECK

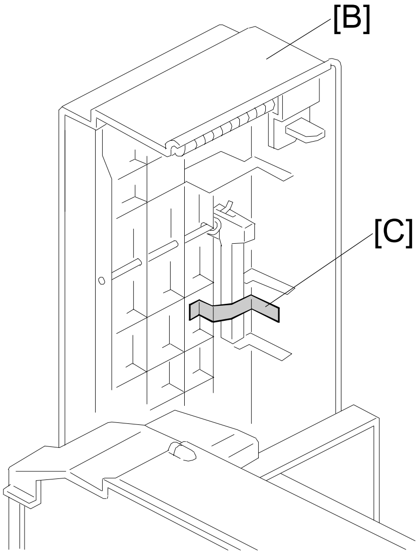
Check the accessories in the box against the following list.

Description	Q'ty
1. LCT Feed Unit	1
2. Small Cap - Left Cover	1
3. Tapping Screw - M4 x 8	3
4. Philips Pan Head Screw - M4 x 16	3
5. Philips Pan Head Screw - M4 x 6	1
6. Installation Procedure (English)	1
7. New Equipment Condition Report (Multi-language)	1

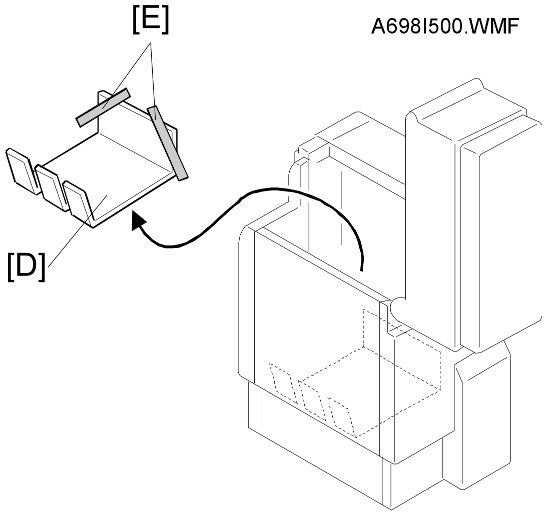
3.4.2 INSTALLATION PROCEDURE



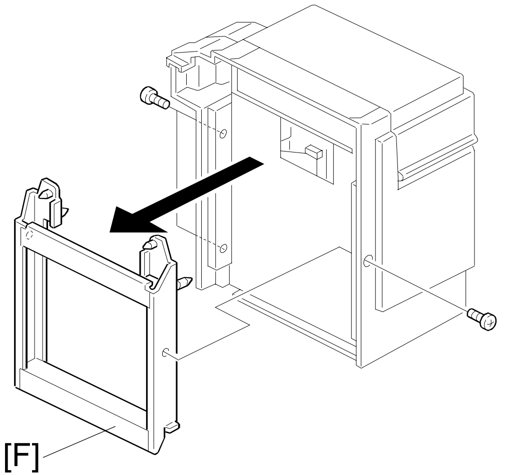
A698I500.WMF



A698I501.WMF



A698I502.WMF

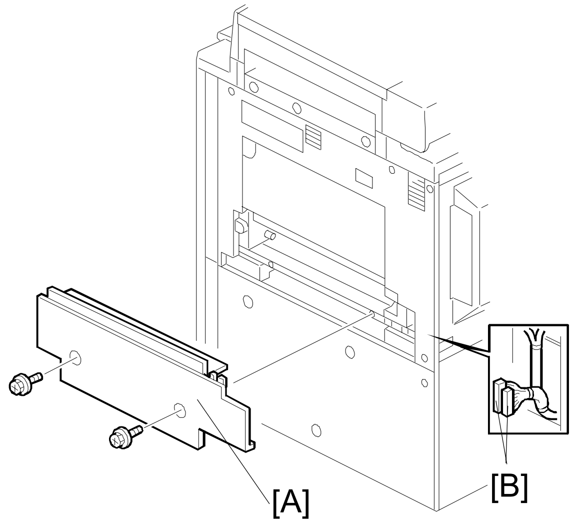


A698I503.WMF

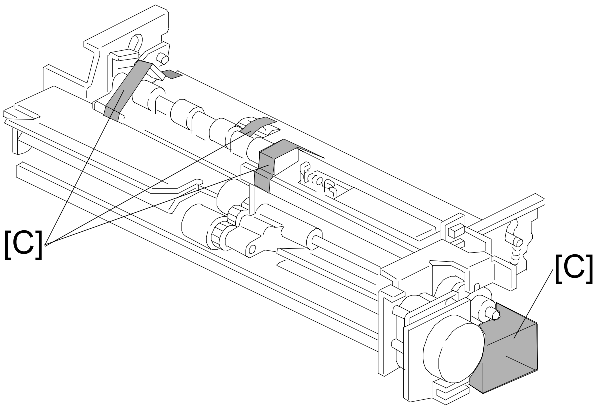
⚠CAUTION

Unplug the copier power cord before starting the following procedure.

1. Remove the strips of tape [A].
2. Open the LCT cover [B] and remove the tape [C] that holds the paper trailing edge stopper.
3. Remove the tray cushion [D] and the strips of tape [E].
4. Remove the LCT connector [F] (3 screws).



A698I504.WMF



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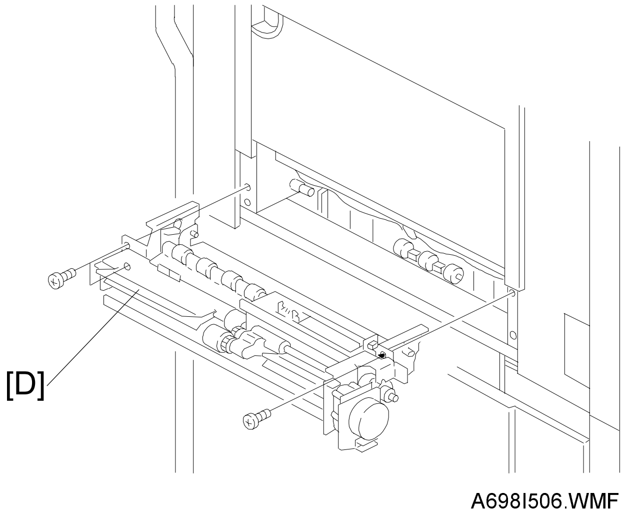
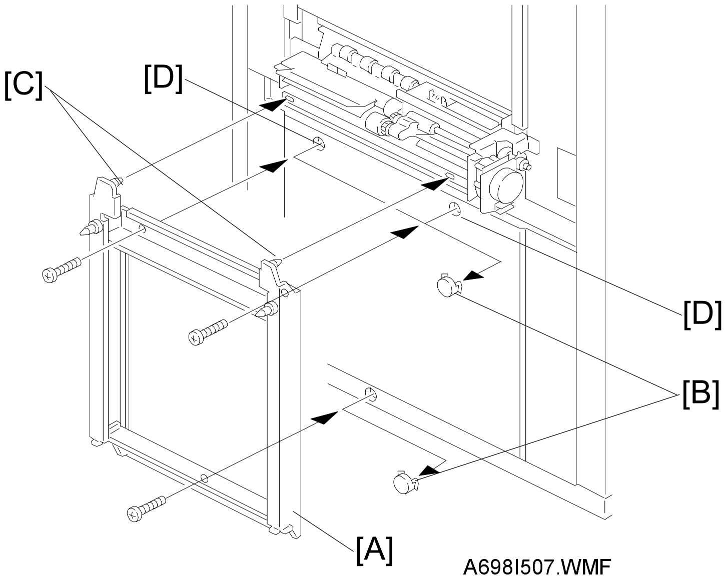


A698I506.WMF

5. Remove the feed unit cover [A] (2 screws) and free the LCT connectors [B].
6. Remove the shipping retainers [C].
7. Install the LCT feed unit [D] in the copier (3 screws - M4 x 8).



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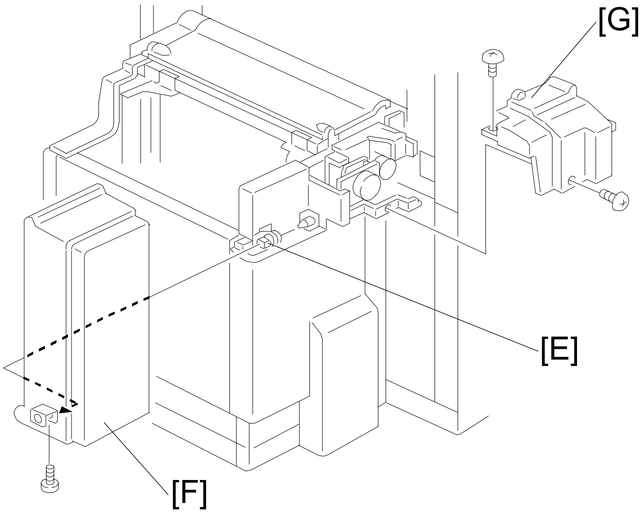
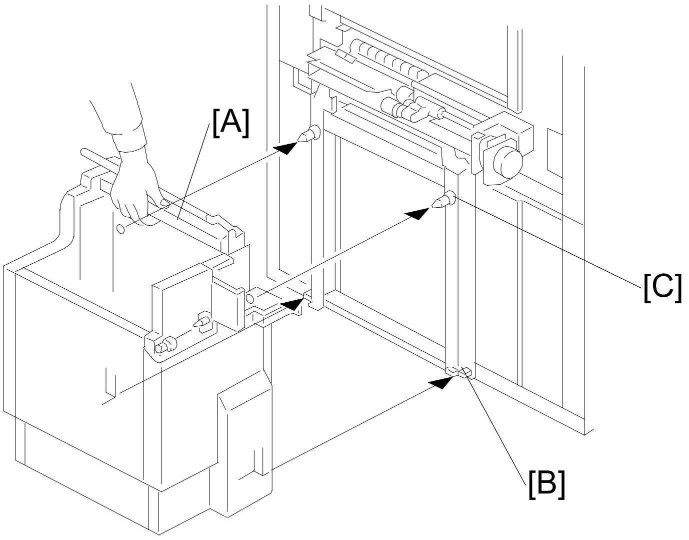


A698I508.WMF

8. Attach the LCT connector [A] to the copier.
   1) Remove the three caps [B].
   2) Fit the two pins [C] on the LCT connector into the two holes [D] in the copier.
   3) Attach the LCT connector to the copier (3 screws - M4 x 16).
9. Remove the screw that holds the upper cover hinge [E], then slide the LCT cover [F] to the right and remove it (1 screw).
10. Remove the rear upper cover [G] (2 screws).



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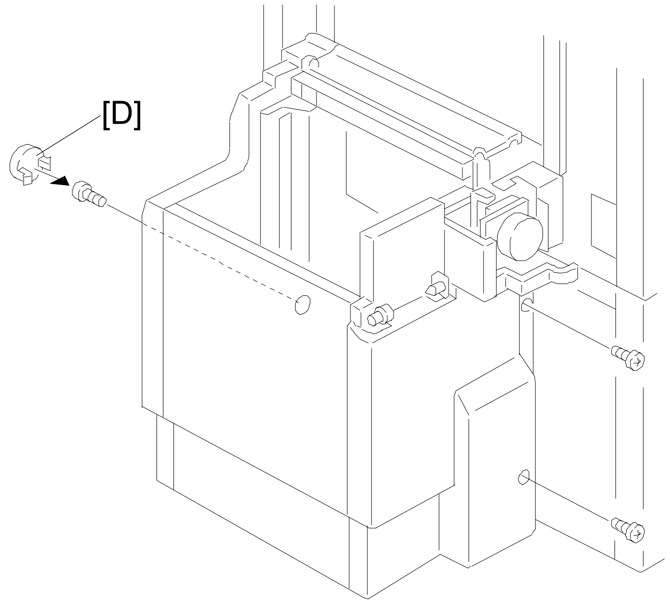
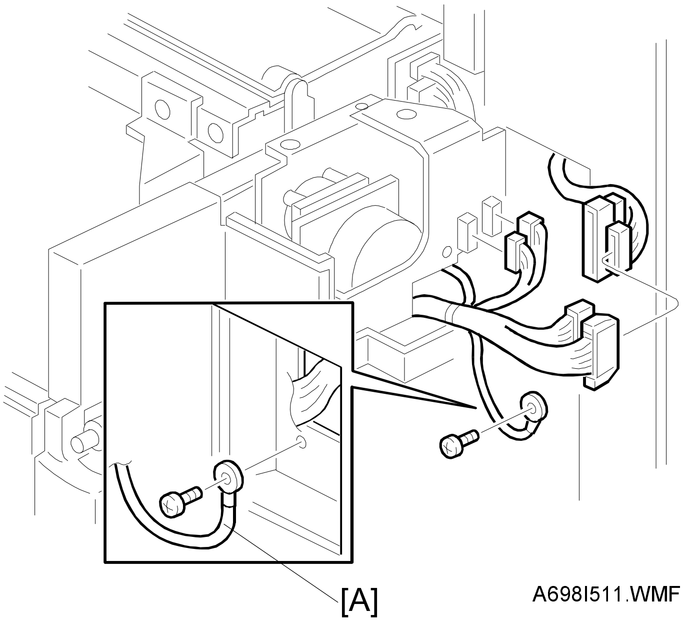


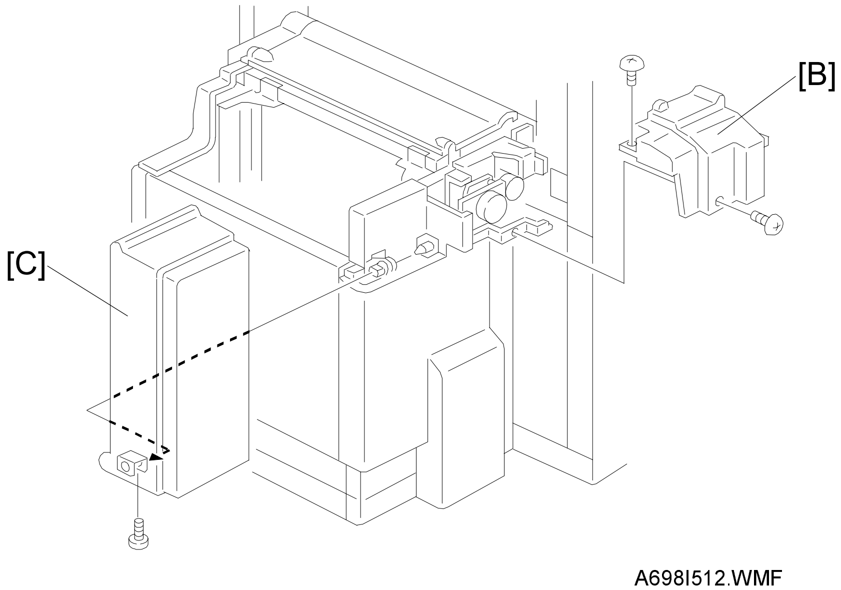
A698I510.WMF

11. Hold the upper stay [A] of the LCT and place the LCT on the bottom plates [B] of the LCT connector.

⚠CAUTION
Place the LCT on the bottom plates [B] of the LCT connector properly (the sides of the LCT and the copier must be parallel).

12. Insert the two pins [C] on the LCT connector into the two holes in the LCT.
13. Secure the LCT to the LCT connector (3 screws).
14. Put the cap [D] in the front screw access hole.





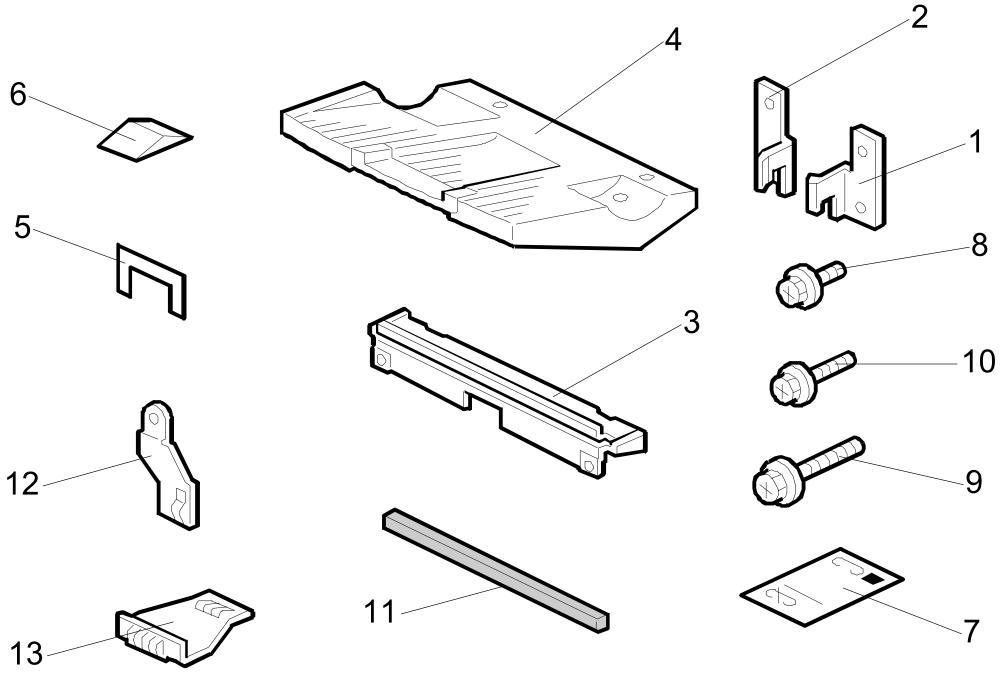
15. Connect the connectors.
    - Between the copier and the LCT (2 connectors).
    - Between the LCT and the LCT feed unit (2 connectors).
16. Secure the protective earth wire [A] to the copier (1 screw – M4 x 6).
17. Attach the rear upper cover [B] (2 screws).
18. Attach the LCT cover [C] (1 screw).
19. Plug in the copier and check the machine's operation.
    NOTE: The copier automatically recognizes that the LCT has been installed.

3.5 3,000-SHEET FINISHER (A697)

3.5.1 ACCESSORY CHECK

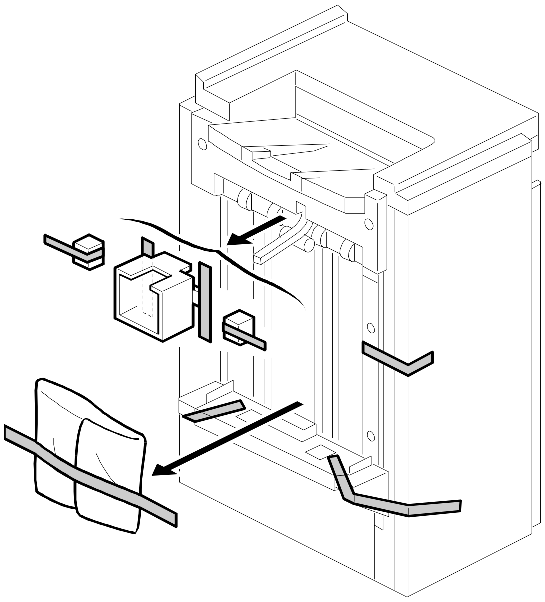
Check the accessories in the box against the following list.

Description	Q'ty
1. Front Joint Bracket	1
2. Rear Joint Bracket	1
3. Entrance Guide Plate	1
4. Shift Tray	1
5. Exit Guide Mylar for the A229	1
6. Shift Tray Guide for the A232	1
7. Staple Position Decal	1
8. Tapping Screw – M3 x 6	2
9. Tapping Screw – M4 x 14	4
10. Tapping Screw – M3 x 8	4
11. Cushion	1
12. Upper Grounding Plate for the A232 copier	1
13. Lower Grounding Plate	1
14. Installation Procedure (English)	1
15. New Equipment Condition Report (Multi-language)	1



A697I505.WMF

3.5.2 INSTALLATION PROCEDURE



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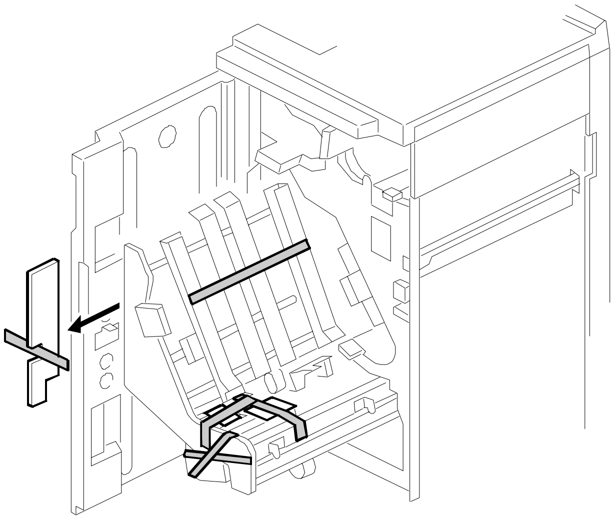
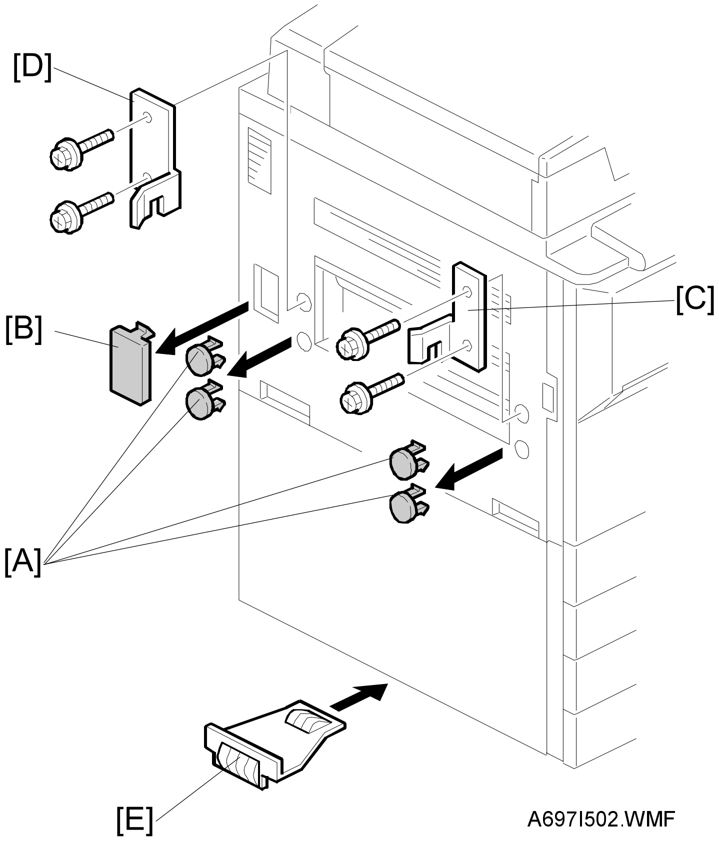


A697I507.WMF

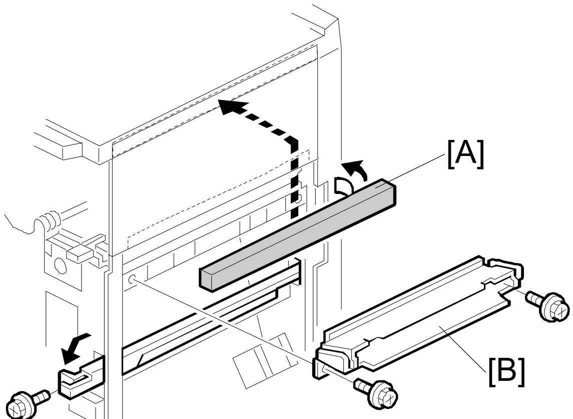
⚠CAUTION

Unplug the main machine's power cord before starting the following procedure.

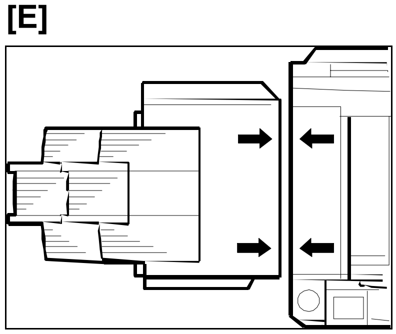
1. Unpack the finisher and remove the tapes.



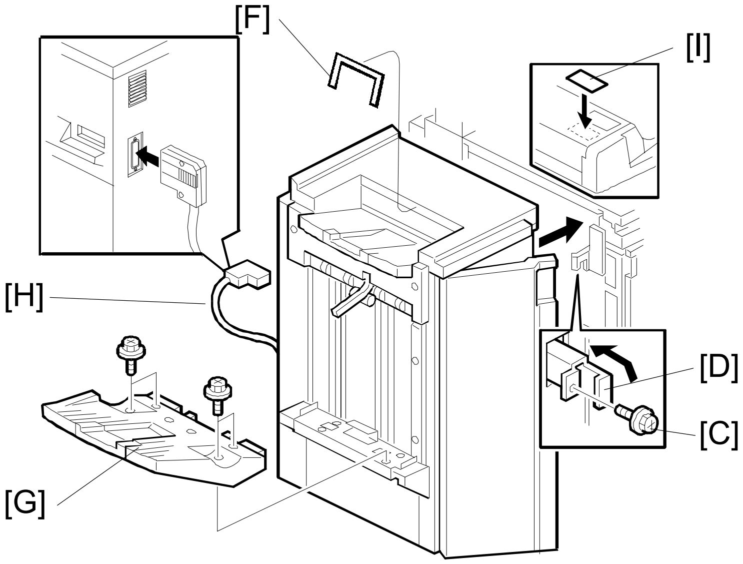
2. Remove the four plastic caps [A] from the copier’s left cover.
3. Remove the connector cover [B].
4. Install the front joint bracket [C] and rear joint bracket [D] (2 screws – M4 x 14 each).
5. Peel off the backing of the double-sided tape that is attached to the lower grounding plate [E].
6. Attach the lower grounding plate to the bottom edge of the paper tray unit as shown.



A697I511.WMF



A229I534.WMF



A229I528.WMF

7. Attach the cushion [A] to the plate as shown.
8. Install the entrance guide plate [B] (2 screws).
9. Open the front door of the finisher, and remove the screw [C] which secures the locking lever [D]. Then pull the locking lever.
10. Align the finisher on the joint brackets, and lock it in place by pushing the locking lever.
    NOTE: Before securing the locking lever, make sure that the top edges of the finisher and the copier are parallel from front to rear as shown [E].
11. Secure the locking lever (1 screw) and close the front door.
12. Attach the exit guide mylar [F] to the anti-static brush bracket located above the upper tray exit roller as shown.
13. Install the shift tray [G] (4 screws).
14. Connect the finisher cable [H] to the main machine.
15. Attach the staple position decal [I] to the ARDF as shown.
16. Turn on the main power switch and check the finisher operation.

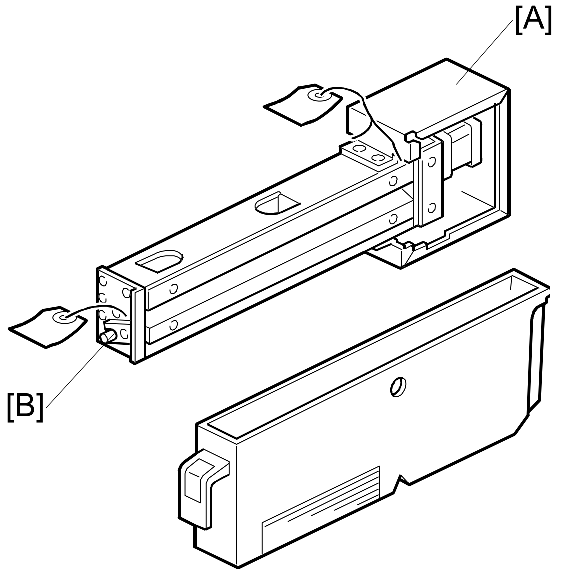
3.6 PUNCH UNIT INSTALLATION (A812)

3.6.1 ACCESSORY CHECK

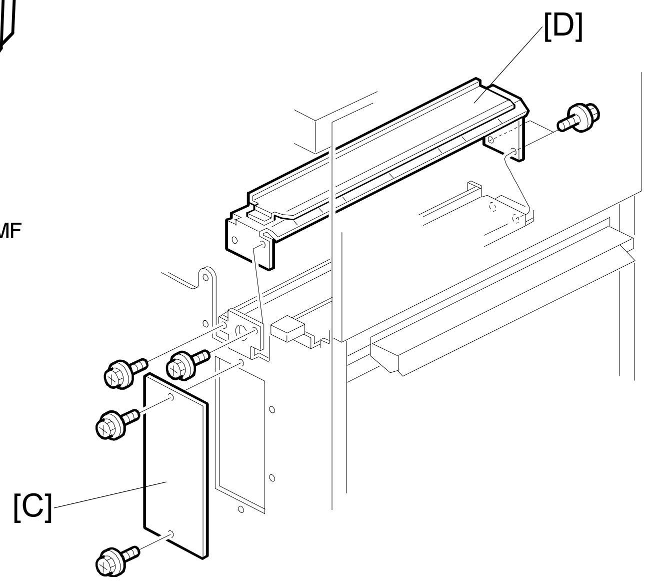
Check the accessories in the box against the following list.

Description	Q’ty
1. Spacer –2 mm	1
2. Spacer – 1 mm	2
3. Stepped Screw – Short	1
4. Stepped Screw – Long	1
5. Punch Unit Knob	1
6. Spring	1
7. Harness – Long	1
8. Harness – Short	1
9. Hopper	1
10. Punch Position Decal	1
11. Tapping Screw – M4 x 10	2
12. Screw with Flat Washer – M4 x 6	1
13. New Equipment Condition Report (Multi-language)	1

3.6.2 PUNCH UNIT INSTALLATION



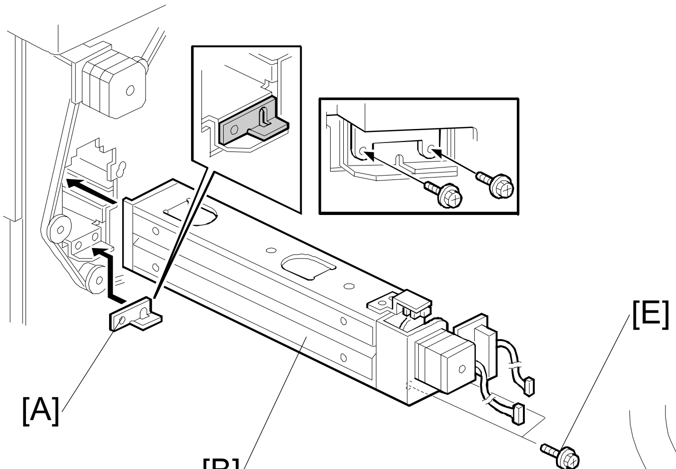
A812I500.WMF



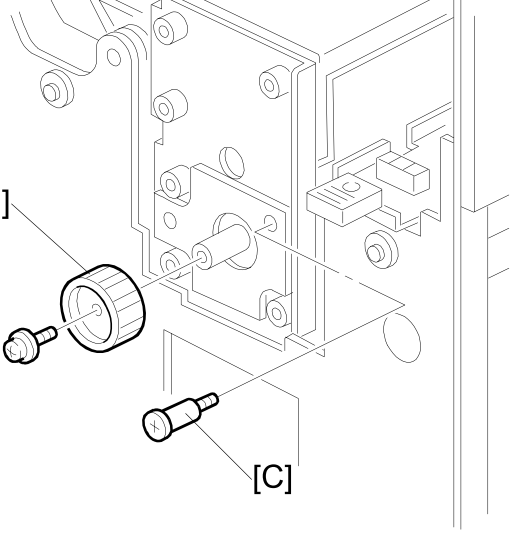
A812I501.WMF

⚠CAUTION
Unplug the copier power cord and remove the 3,000-sheet finisher from the copier before starting the following procedure.

1. Unpack the punch unit and remove the shipping retainers [A] (4 screws) and [B] (1 screw).
2. Open the front door and remove the hopper cover [C] (2 screws).
3. Remove the rear cover (2 screws) and remove the transport guide plate [D] (4 screws).

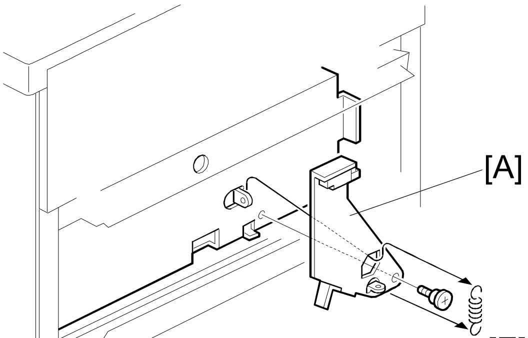


A812I502.WMF

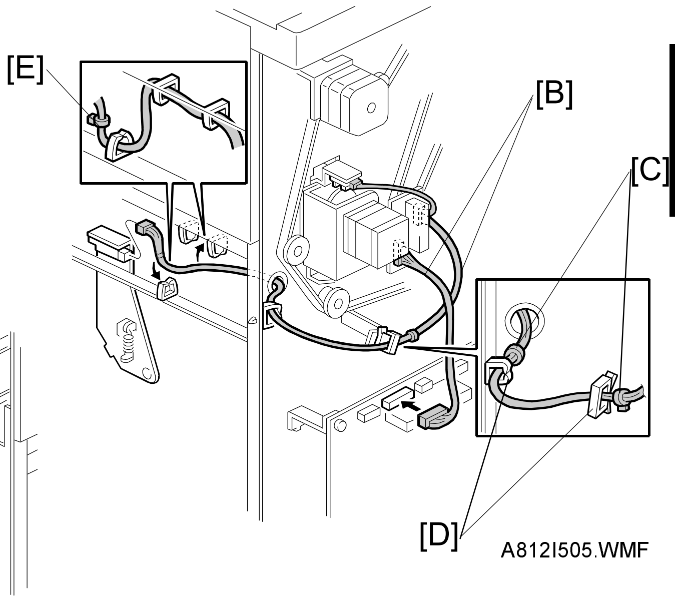


A812I503.WMF

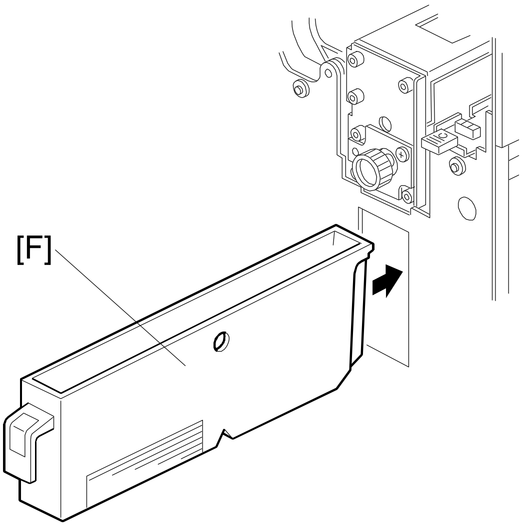
4. Install the spacer [A] (thickness = 2 mm).
   NOTE: There are three spacers in the accessory box. Do not lose the other two spacers (1 mm), because they are used for adjusting the punch hole position.
5. Install the punch unit [B] and secure it with a long stepped screw [C].
6. Install the punch unit knob [D] (1 screw).
7. Secure the rear of the punch unit (2 screws [E]).



A812I504.WMF



A812I505.WMF



A812I506.WMF

8. Install the sensor bracket [A] (1 short stepped screw, 1 spring).
9. Connect the cables [B].

NOTE: 1) The cable binders [C] must not be between the cable clamps [D].
2) The cable binder [E] must be positioned to the left of the cable clamp.

10. **When a three-punch-hole-unit is installed:** Change switch 1 of DIP SW 100 on the finisher control board to ON.
11. Slide the hopper [F] into the finisher.
12. Reassemble the finisher and attach it to the copier. Then check the punch unit operation.

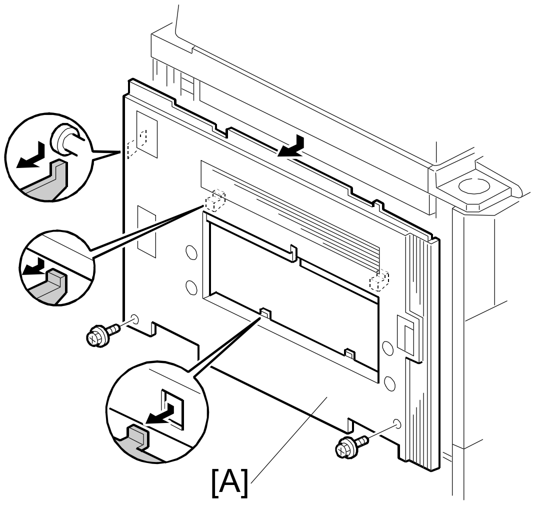
3.7 OUTPUT TRAY (A814)

3.7.1 ACESSORY CHECK

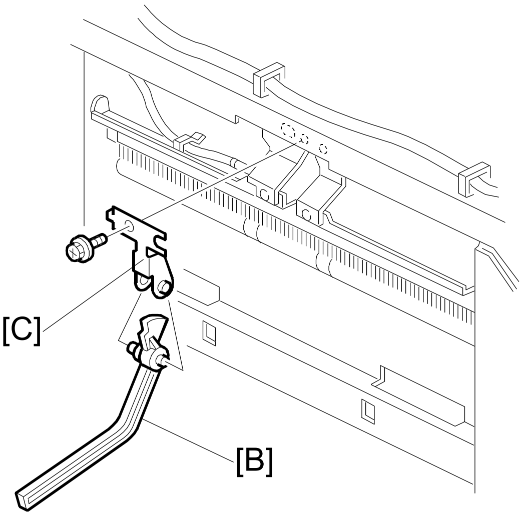
Check the accessories in the box against the following list.

Description	Q’ty
1. Output Tray	1
2. Tray Paper Limit Sensor Feeler	1
3. Feeler Securing Bracket	1
4. Tapping Screw – M3 x 6	1

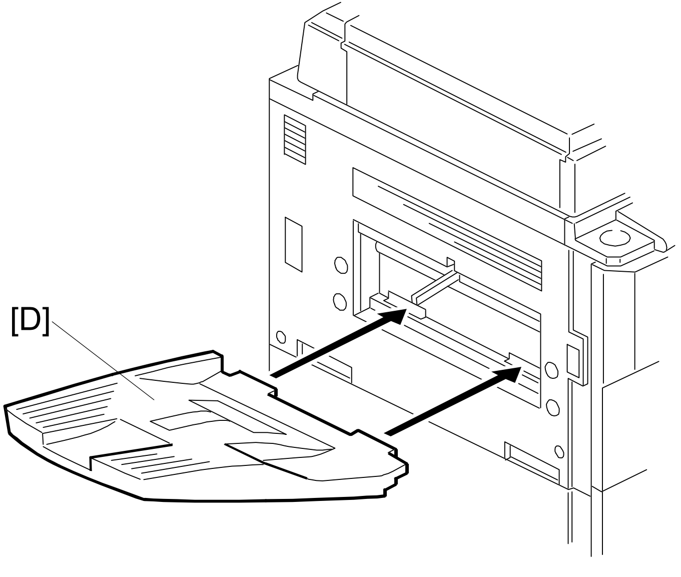
3.7.2 OUTPUT TRAY INSTALLATION PROCEDURE



A814I502.WMF



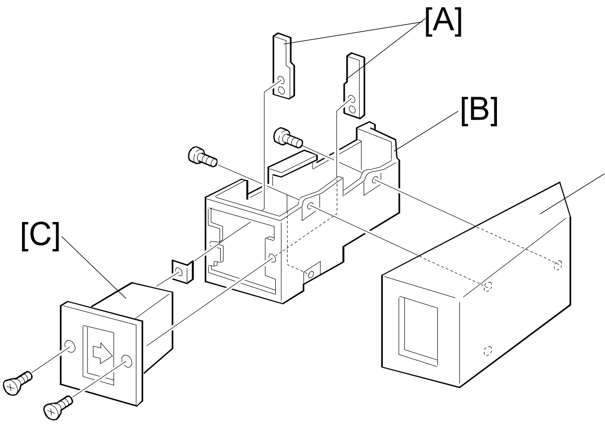
A814I501.WMF



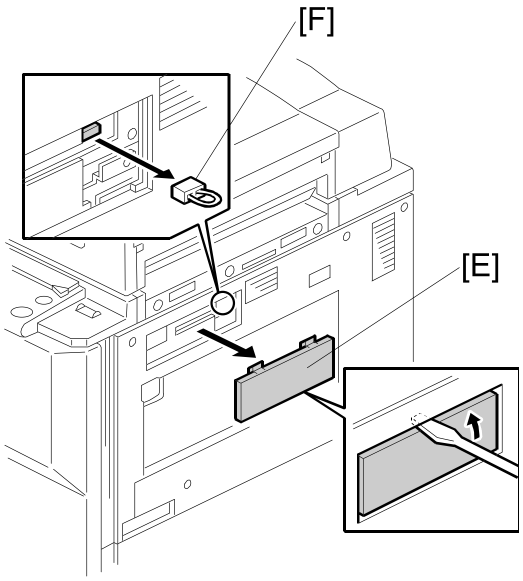
A814I500.WMF

1. Remove the left cover [A] (2 screws).
2. Attach the sensor feeler [B] to the feeler securing bracket [C], and install it in the copier as shown (1 screw).
3. Reinstall the left cover and install the output tray [D] as shown.

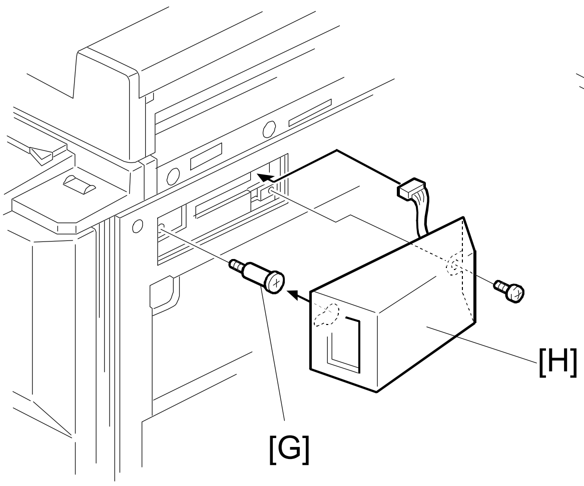
3.8 KEY COUNTER INSTALLATION



A229I532.WMF



A229I531.WMF



A229I530.WMF

1. Hold the key counter plates [A] on the inside of the key counter bracket [B] and insert the key counter holder [C].
2. Secure the key counter holder to the bracket (2 screws).
3. Attach the key counter cover [D] (2 screws).
4. Remove the small cover [E] on the right side of the copier as shown.
5. Remove the jumper connector [F].
6. Install the stepped screw [G].
7. Install the key counter assembly [H] (1 screw).
8. Instruct the user's key operator to enable the key counter with the User Tools (User Tools – System Settings – Count Manager – Key Counter).

4. SERVICE TABLES

4.1 GENERAL CAUTIONS

Do not turn off either of the power switches while any of the electrical components are active. Doing so might cause damage to units such as the transfer belt, drum, and development unit when they are pulled out of or put back into the copier.

4.1.1 DRUM

An organic photoconductor (OPC) drum is more sensitive to light and ammonia gas than a selenium drum. Follow the cautions below when handling an OPC drum.

1. Never expose the drum to direct sunlight.
2. Never expose the drum to direct light of more than 1,000 Lux for more than a minute.
3. Never touch the drum surface with bare hands. When the drum surface is touched with a finger or becomes dirty, wipe it with a dry cloth or clean it with wet cotton. Wipe with a dry cloth after cleaning with wet cotton.
4. Never use alcohol to clean the drum; alcohol dissolves the drum surface.
5. Store the drum in a cool, dry place away from heat.
6. Take care not to scratch the drum as the drum layer is thin and is easily damaged.
7. Never expose the drum to corrosive gases such as ammonia gas.
8. Always keep the drum in the protective sheet when keeping the drum unit, or the drum itself, out of the copier. Doing so avoids exposing it to bright light or direct sunlight, and will protect it from light fatigue.
9. Dispose of used drums in accordance with local regulations.
10. When installing a new drum, do the Auto Process Control Data Adjustment (SP 2-962).

4.1.2 DRUM UNIT

1. Before pulling out the drum unit, place a sheet of paper under the drum unit to catch any spilt toner.
2. Make sure that the drum unit is set in position and the drum stay is secured with a screw before the main switch is turned on. If the drum unit is loose, poor contact of the drum connectors may cause electrical noise, resulting in unexpected malfunctions (RAM data change is the worst case).
3. To prevent drum scratches, remove the development unit before removing the drum unit.

4.1.3 TRANSFER BELT UNIT

1. Never touch the transfer belt surface with bare hands.
2. Take care not to scratch the transfer belt, as the surface is easily damaged.
3. Before installing the new transfer belt, clean all the rollers and the inner part of the transfer belt with a dry cloth to prevent the belt from slipping.

4.1.4 SCANNER UNIT

1. When installing the exposure glass, make sure that the white paint is at the rear left corner.
2. Clean the exposure glass with alcohol or glass cleaner to reduce the amount of static electricity on the glass surface.
3. Use a cotton pad with water or a blower brush to clean the mirrors and lens.
4. Do not bend or crease the exposure lamp flat cable.
5. Do not disassemble the lens unit. Doing so will throw the lens and the copy image out of focus.
6. Do not turn any of the CCD positioning screws. Doing so will throw the CCD out of position.

4.1.5 LASER UNIT

1. Do not loosen the screws that secure the LD drive board to the laser diode casing. Doing so would throw the LD unit out of adjustment.
2. Do not adjust the variable resistors on the LD unit, as they are adjusted in the factory.
3. The polygon mirror and F-theta lenses are very sensitive to dust. Do not open the optical housing unit.
4. Do not touch the glass surface of the polygon mirror motor unit with bare hands.
5. After replacing the LD unit, do the laser beam pitch adjustment. Otherwise, an SC condition will be generated.

4.1.6 CHARGE CORONA

1. Clean the corona wires with a dry cloth. Do not use sandpaper or solvent.
2. Clean the charge corona casing with water first to remove NOx based compounds. Then clean it with alcohol if any toner still remains on the casing.
3. Clean the end block with a blower brush first to remove toner and paper dust. Then clean with alcohol if any toner still remains.
4. Do not touch the corona wires with bare hands. Oil stains from fingers may cause uneven image density on copies.
5. Make sure that the wires are correctly between the cleaner pads and that there is no foreign material (iron filings, etc.) on the casing.
6. When installing new corona wires, do not bend or scratch the wire surface. Doing so may cause uneven charge. Also be sure that the corona wires are correctly positioned in the end blocks. (See Charge Corona Wire Replacement)
7. Clean the grid plate with a blower brush (not with a dry cloth).
8. Do not touch the charge grid plate with bare hands. Also, do not bend the charge grid plate or make any dent in it. Doing so may cause uneven charge.

4.1.7 DEVELOPMENT

1. Be careful not to nick or scratch the development roller.
2. Place the development unit on a sheet of paper after removing it from the copier.
3. Never disassemble the development roller assembly. The position of the doctor plate is set with special tools and instruments at the factory to ensure the proper gap between the doctor blade and the development roller.
4. Clean the drive gears after removing used developer.
5. Dispose of used developer in accordance with local regulations.
6. Never load types of developer and toner into the development unit other than specified for this model. Doing so will cause poor copy quality and toner scattering.
7. Immediately after installing new developer, the TD sensor initial setting procedure should be performed to avoid damage to the copier. Do not perform the TD sensor initial setting with used developer. Do not make any copies before doing the TD sensor initial setting.
8. When using a vacuum cleaner to clean the development unit casing, always ground the casing with your fingers to avoid damaging the toner density sensor with static electricity.
9. When replacing the TD sensor, the developer should be replaced and then the TD sensor initial setting procedure (SP 2-801) should be done.

4.1.8 CLEANING

1. When servicing the cleaning section, be careful not to damage the edge of the cleaning blade.
2. Do not touch the cleaning blade with bare hands.
3. Before disassembling the cleaning section, place a sheet of paper under it to catch any toner falling from it.

4.1.9 FUSING UNIT

1. After installing the fusing thermistor, make sure that it is in contact with the hot roller and that it is movable.
2. Be careful not to damage the edges of the hot roller strippers or their tension springs.
3. Do not touch the fusing lamp and rollers with bare hands.
4. Make sure that the fusing lamp is positioned correctly and that it does not touch the inner surface of the hot roller.

4.1.10 PAPER FEED

1. Do not touch the surface of the pick-up, feed, and separation rollers.
2. To avoid paper misfeeds, the side fences and end fence of the paper tray must be positioned correctly to align with the actual paper size.

4.1.11 USED TONER

1. We recommend checking the amount of used toner at every EM.
2. Dispose of used toner in accordance with local regulations. Never throw toner into an open flame, for toner dust may ignite.

4.2 SERVICE PROGRAM MODE

4.2.1 SERVICE PROGRAM MODE OPERATION

The service program (SP) mode is used to check electrical data, change modes, and adjust values.

Service Program Access Procedure

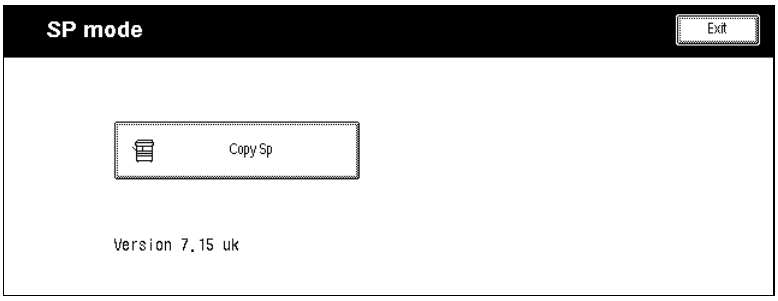
Entering SP mode

1) Press the following keys in sequence.

◈/● → 1 → 0 → 7 → C/⊽

NOTE: Hold the C/⊽ key for more than 3 seconds.

2) A menu of SP modes is displayed on the LCD.

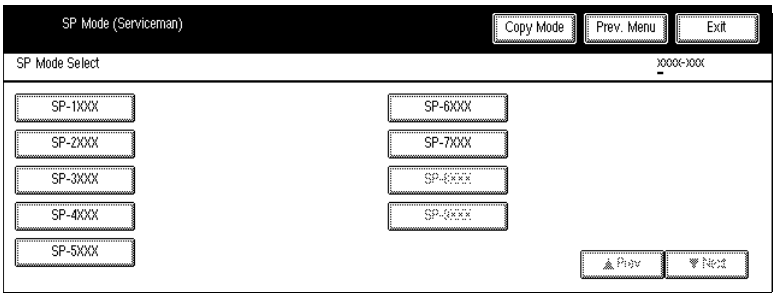


Version 7.15 uk

A229M500.TIF

NOTE: 1) The installed applications appear as Copy SP and Printer SP. If the printer application is not installed, its name does not appear.
2) The meaning of the bottom line is as follows.
- "Ver 7.15 uk" is the SBICU board software version.

3) Touch the application which you need. Then, the application's SP mode display will appear, as shown.


SP Mode (Serviceman)
Copy Mode
Prev. Menu
Exit
SP Mode Select
XXXX-XXX
SP-1XXX
SP-2XXX
SP-3XXX
SP-4XXX
SP-5XXX
SP-6XXX
SP-7XXX
SP-8XXX
SP-9XXX
▲Prev
▼Next

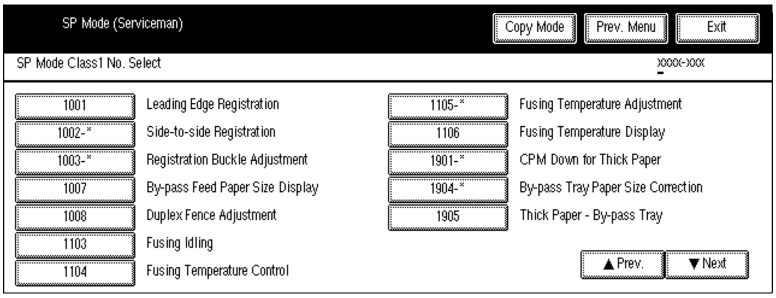
A229M501.TIF

Exiting SP mode

1) Touch the "Exit" keys to return to the standby mode display.

Accessing Copy Mode from within an SP Mode

1) Touch the “Copy Mode” key.

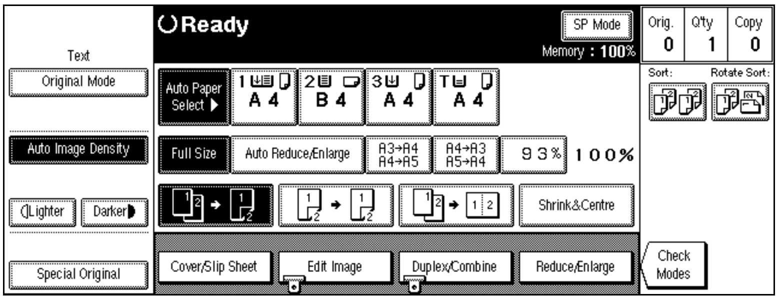

SP Mode (Serviceman)
Copy Mode
Prev. Menu
Exit
▲Prev.
▼Next

SP Mode Class1 No. Select XXXX-XXX

1001	Leading Edge Registration	1105-*	Fusing Temperature Adjustment
1002-*	Side-to-side Registration	1106	Fusing Temperature Display
1003-*	Registration Buckle Adjustment	1901-*	CPM Down for Thick Paper
1007	By-pass Feed Paper Size Display	1904-*	By-pass Tray Paper Size Correction
1008	Duplex Fence Adjustment	1905	Thick Paper - By-pass Tray
1103	Fusing Idling		
1104	Fusing Temperature Control		

A229M502.TIF

2) Select the appropriate copy mode and make trial copies.
3) To return to the SP mode, touch the “SP mode” key.


Ready
SP Mode
Memory : 100%
Orig. 0
Q'ty 1
Copy 0
Text
Original Mode
Auto Image Density
Lighter
Darker
Special Original
Auto Paper Select
1 A 4
2 B 4
3 A 4
T A 4
Sort:
Rotate Sort:
Full Size
Auto Reduce/Enlarge
A3→A4 A4→A5
A4→A3 A5→A4
93%
100%
Shrink&Centre
Cover/Slip Sheet
Edit Image
Duplex/Combine
Reduce/Enlarge
Check Modes

A229M503.TIF

Selecting the Program Number

Program numbers are composed of two or three levels.

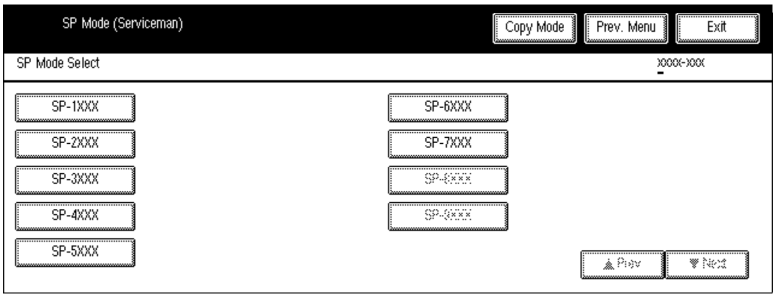
There are two ways to select the program number.

Ten-key Pad

Input the required program number.

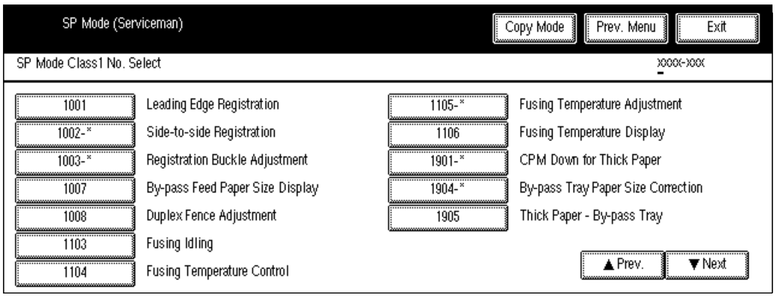
Touch Panel

1. Touch the 1st level program.


SP Mode (Serviceman)
Copy Mode
Prev. Menu
Exit
SP Mode Select
XXXX-XXX
SP-1XXX
SP-2XXX
SP-3XXX
SP-4XXX
SP-5XXX
SP-6XXX
SP-7XXX
SP-8XXX
SP-9XXX
▲Prev.
▼Next

A229M501.TIF

2. Touch the 2nd level program.

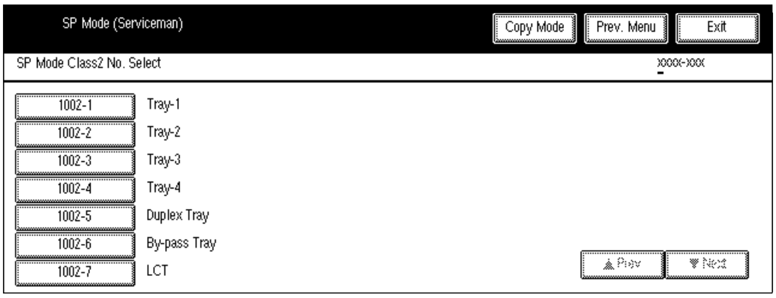

SP Mode (Serviceman)
Copy Mode
Prev. Menu
Exit
SP Mode Class1 No. Select
XXXX-XXX
▲Prev.
▼Next

1001	Leading Edge Registration
1002-*	Side-to-side Registration
1003-*	Registration Buckle Adjustment
1007	By-pass Feed Paper Size Display
1008	Duplex Fence Adjustment
1103	Fusing Idling
1104	Fusing Temperature Control
1105-*	Fusing Temperature Adjustment
1106	Fusing Temperature Display
1901-*	CPM Down for Thick Paper
1904-*	By-pass Tray Paper Size Correction
1905	Thick Paper - By-pass Tray

A229M502.TIF

NOTE: A "*" mark indicates that there are 3rd level programs.

3. Touch the 3rd level program.


SP Mode (Serviceman)
Copy Mode
Prev. Menu
Exit
SP Mode Class2 No. Select
XXXX-XXX
▲Prev.
▼Next

1002-1	Tray-1
1002-2	Tray-2
1002-3	Tray-3
1002-4	Tray-4
1002-5	Duplex Tray
1002-6	By-pass Tray
1002-7	LCT

A229M506.TIF

Inputting a Value or Setting for an SP Mode

1. Select the required program mode as explained on the previous page.
2. Enter the required setting using the ten-key pad, then touch the “Start” key or OK key or ⊞ key.

   NOTE: 1) If you forget to touch the “Start” key or OK key, the previous value remains.
   2) Change between “+” and “-“ using the “•” key before entering the required value.

3. Exit SP mode.

4.2.2 SERVICE PROGRAM MODE TABLES

NOTE: 1) In the Function column, comments are in italics.
2) In the Settings column, the default value is in bold letters.
3) An asterisk (*) in the right hand side of the mode number column means that this mode is stored in the NVRAM. If you do a RAM reset, all these SP modes will be reset to their factory settings.

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
1-001	Leading Edge Registration				
			*	Adjusts the printing leading edge registration using the trimming area pattern (SP2-902-3, No.10). *Use the "•" key to toggle between + and – before entering the value.* *The specification is 3 ±2 mm. See "Replacement and Adjustment - Copy Image Adjustments" for details.*	+9 ~ -9 0.1 mm/step **+ 3.0 mm**
1-002	Side-to-Side Registration				
	1	Tray - 1	*	Adjusts the printing side-to-side registration from the 1st paper feed station using the trimming area pattern (SP2-902-3, No.10). *Use the "•" key to toggle between + and - before entering the value.* *The specification is 0 ±2.0 mm.* *See "Replacement and Adjustment - Copy Image Adjustments" for details on SP1-002.*	+9 ~ -9 0.1 mm/step **+ 0.0 mm**
	2	Tray - 2	*	Adjusts the printing side-to-side registration from the 2nd paper feed station using the trimming area pattern (SP2-902-3, No.10). *Use the "•" key to toggle between + and - before entering the value.* *The specification is 0 ±2.0 mm.*	+9 ~ -9 0.1 mm/step **+ 0.0 mm**
	3	Tray - 3	*	Adjusts the printing side-to-side registration from the 3rd paper feed station using the trimming area pattern (SP2-902-3, No.10). *Use the "•" key to toggle between + and – before entering the value.* *The specification is 0 ±2.0 mm.*	+9 ~ -9 0.1 mm/step **+ 0.0 mm**
	4	Tray - 4	*	**Japanese version only.**	
	5	Duplex Tray	*	Adjusts the printing side-to-side registration from the duplex tray using the trimming area pattern (SP2-902-3, No.10). *Use the "•" key to toggle between + and – before entering the value.* *The specification is 0 ±2.0 mm.*	+9 ~ -9 0.1 mm/step **+ 0.0 mm**

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
1-002	Side-to-Side Registration				
	6	By-pass Tray	*	Adjusts the printing side-to-side registration from the by-pass feed table using the trimming area pattern (SP2-902-3, No.10). *Use the "•" key to toggle between + and – before entering the value.* *The specification is 0 ±2.0 mm.*	+9 ~ -9 0.1 mm/step **+ 0.0 mm**
	7	LCT	*	Adjusts the printing side-to-side registration from the LCT using the trimming area pattern (SP2-902-3, No.10). *Use the "•" key to toggle between + and – before entering the value.* *The specification is 0 ±2.0 mm.*	+9 ~ -9 0.1 mm/step **+ 0.0 mm**
1-003	Paper Feed Timing				
	1	Tray, Duplex	*	Adjusts the relay clutch timing at registration. The relay clutch timing determines the amount of paper buckle at registration. (A +ve setting leads to more buckling.)	+9 ~ -9 1 mm/step **+ 0 mm**
	2	By-pass Tray	*		
1-007	By-pass Feed Paper Size Display				
				Displays the paper width sensor data for the by-pass feed table. 132 : A3 133 : A4 Lengthwise 134 : A5 Lengthwise 141 : B4 Lengthwise 142 : B5 Lengthwise 160 : DLT 164 : LG 166 : LT Lengthwise 172 : HLT Lengthwise	
1-008	Duplex Fence Adjustment				
			*	Adjusts the distance between the front and rear fences.	+4 ~ -4 0.5 mm/step **+ -1.0 mm**
1-103	Fusing Idling				
			*	Selects whether fusing idling is done or not. *If fusing is incomplete on the 1st and 2nd copies, change the setting to a longer time. This may occur if the room is cold.* *Refer to "Detailed Section Descriptions - Fusing Temperature Control" for more details.*	**0: 5½** min. 1: 10 min. 2: 15 min. 3: No idling
1-104	Fusing Temperature Control				
			*	Selects the fusing temperature control mode. After changing the setting, turn the main switch off and on.	**On/Off control** Phase control

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
1-105	Fusing Temperature Adjustment				
	1	By-pass	*	Adjusts the fusing temperature for paper fed from a by-pass tray.	170 ~ 200 1°C/step **185°C**
	2	OHP	*	Adjusts the fusing temperature for OHP sheets fed from the by-pass feed unit.	+10 ~ -10°C 1°C/step **0 (165°C)**
	3	Thick Paper	*	Adjusts the fusing temperature for thick paper fed from the by-pass feed unit.	+5 ~ -10°C 1°C/step **0 (165°C)**
1-106	Fusing Temperature Display				
				Displays the fusing temperature.	
1-901	CPM Change for Thick Paper				
	1	Tray 1	*	Selects the copy speed when the fusing temperature goes down when using thick paper. During a long copy run, the hot roller cools down. This may cause poor fusing. To do this, the copy speed can be reduced when the temperature reaches a certain level. The 4th tray is used for the Japanese version only.	**0: None** 1: 50 cpm - 165°C 2: 45 cpm - 175°C
	2	Tray 2	*		
	3	Tray 3	*		
	4	Tray 4	*		
	5	LCT	*		
1-904	By-pass Tray Paper Size Correction*				
	1	Minimum Size		Calibrates the maximum paper width position of the sensor (100).	Start
	2	Maximum Size		Calibrates the minimum paper width position of the sensor (A3).	Start
1-905	Thick Paper Mode - By-pass Table				
			*	Selects the by-pass feed clutch on mode for thick paper mode.	**ON: Twice** OFF: Once
2-001	Charge Corona Bias Adjustment				
	1	Image Area	*	Adjusts the voltage applied to the grid plate during copying when auto process control is **off**. *Normally, there is no need to adjust this. If there is an ID or TD sensor problem, the machine goes into fixed toner supply mode.* *After replacing the drum or charge corona wire, change this value to the default.*	-600 ~ -1300 10 V/step **-1000 V**
	2	ID Sensor Pattern	*	Adjusts the voltage applied to the grid plate when making the ID sensor pattern. *Normally, there is no need to adjust this.. If the user wants high density copies, the sensor pattern must be lighter, so this voltage must be a higher negative voltage.*	-600 ~ -1300 10 V/step **-650 V**

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
2-001	Charge Corona Bias Adjustment				
	3	Total Corona Current	*	Adjusts the current applied to the charge corona wire. Factory use only.	-900 ~ -1500 10 µA/step **–1200 µA**
	4	Image Area	*	Adjusts the voltage applied to the grid plate during copying when auto process control is **on**. This voltage changes every time auto process control starts up (every time the machine is switched on)	-600 ~ -1300 10 V/step **-1000 V**
	5	OHP Sheet	*	Adjusts the voltage applied to the grid plate when OHP mode is selected. Use this if there is a copy quality problem when making OHPs. Normally there is no need to adjust this. See 2-001-1.	-600 ~ -1300 10 V/step **–780 V**
2-101	Printing Erase Margin				
	1	Leading Edge	*	Adjusts the leading edge erase margin. *The specification is 3 ±2 mm. See "Replacement and Adjustment - Copy Image Adjustments" for more on SP2-101.*	0.0 ~ 9.0 0.1 mm/step **2.0 mm**
	2	Trailing Edge	*	Adjusts the trailing edge erase margin. *The specification is 3 ±2 mm.*	0.0 ~ 9.0 0.1 mm/step **2.0 mm**
	3	Left	*	Adjusts the left side erase margin. *The specification is 2 ±1.5 mm.*	0.0 ~ 9.0 0.1 mm/step **2.0 mm**
	4	Right	*	Adjusts the right side erase margin. *The specification is 2 +2.5/-1.5 mm.*	0.0 ~ 9.0 0.1 mm/step **2.0 mm**
2-103	LD Power Adjustment				
	1	LD1 - 400dpi	*	Adjusts the power of LD1 for 400 dpi resolution. ***Do not change the value.***	-127 ~ +127 1/step 1=1.1 µW **+0**
	2	LD1 - 600dpi	*	Adjusts the power of LD1 for 600 dpi resolution. ***Do not change the value.***	-127 ~ +127 1/step 1=1.1 µW **+0**
	3	LD2 - 400dpi	*	Adjusts the power of LD2 for 400 dpi resolution. ***Do not change the value.***	-127 ~ +127 1/step 1=1.1 µW **+0**
	4	LD2 - 600dpi	*	Adjusts the power of LD2 for 600 dpi resolution. ***Do not change the value.***	-127 ~ +127 1/step 1=1.1 µW **+0**
	5	LD1 Power Adjustment (Start/End)	*	**Factory use only. Do not use this SP mode.**	Start Stop
	6	LD2 Power Adjustment (Start/End)	*	**Factory use only. Do not use this SP mode.**	Start Stop

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
2-109	Laser Beam Pitch Adjustment				
	1	400 dpi	*	Adjusts the laser beam pitch value for 400 dpi resolution. *After replacing the LD unit or replacing or clearing the NVRAM, use this SP mode and SP2-109-3 to adjust the laser beam pitch. Refer to "Replacement and Adjustment - Laser Beam Pitch Adjustment" for details.*	0 ~ 262 4 pulses/step **144**
	2	600 dpi	*	Adjusts the laser beam pitch value for 600 dpi resolution. *After replacing the LD unit , replacing or clearing the NVRAM, use this SP mode and SP2-109-4 to adjust the laser beam pitch. Refer to "Replacement and Adjustment - Laser Beam Pitch Adjustment" for details.*	0 ~ 284 4 pulses/step **168**
	3	400 dpi Initial Setting	*	Initializes the laser beam pitch for 400 dpi to the SP2-109-1 value. *After inputting a value for SP2-109-1, this SP must be used.*	Start
	4	600 dpi Initial Setting	*	Initializes the laser beam pitch for 600 dpi to the SP2-109-2 value. *After inputting a value for SP2-109-2, this SP must be used.*	Start
	5	Auto Pitch Adjustment Interval	*	Inputs the interval for the automatic laser beam pitch adjustment *When the number of times that the resolution been changed reaches this value, the laser unit position is automatically corrected.*	0 ~ 65535 1/step **1000 times**
	6	Current LD Unit Position	*	Displays the current LD unit position (number of pulses from home position). If this is different from the value of 2-109-1 or 2-109-2, LD unit positioning has failed.	
	7	Beam Pitch Change Counter	*	Displays how many times the LD unit position has been changed (how many times the resolution has changed.) *When the laser beam pitch adjustment is done, this counter is reset to "0".*	
	8	Beam Pitch Data Reset	*	Resets the values of SP2-109-6 and SP2-109-7. *After replacing the LD unit, this SP mode must be done.*	
2-110	Test Mode dpi				
				Designer use only. Do not change this value.	**0: 400 dpi** 1: 600 dpi 2: 15.4 x 16 3: 16 x 15.4

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
2-201	Development Bias Adjustment				
	1	Image Area	*	Adjusts the development bias for copying. *This can be adjusted as a temporary measure if faint copies appear due to an aging drum.*	-200 ~ -700 10 V/step **-550 V**
	2	ID Sensor Pattern	*	Adjusts the development bias for making the ID sensor pattern for Vsp measurement. *This should not be used in the field, because it affects ID sensor pattern density, which affects toner supply.*	-200 ~ -700 10 V/step -**360 V**
	3	OHP Sheet	*	Adjusts the development bias for copying onto OHP sheets.	-200 ~ -700 10 V/step **-550 V**
	4	Development Performance	*	Adjusts the development potential for making the ID sensor pattern for Vsp measurement. Do not adjust.	-140 ~ -380 1 V/step **-270 V**
2-207	Forced Toner Supply				
				Forces the toner bottle to supply toner to the toner supply unit for 7 seconds. *This mode finishes automatically after the toner is supplied 7 times (1 s for each time). This process is not normally needed in the field for this model.*	Start
2-208	Toner Supply Mode				
			*	Selects the toner supply mode. *Use image pixel count mode only as a temporary countermeasure if the ID or TD sensor is defective.*	**Sensor Control** Image Pixel Count
2-209	Toner Supply Rate				
			*	Adjusts the toner supply rate. *Increasing this value reduces the toner supply clutch on time. Use a lower value if the user tends to make lots of copies that have a high proportion of black.*	50 ~ 2000 5 mg/s/ step **650 mg/s**
2-210	ID Sensor Interval				
				Changes the interval for making the ID sensor pattern (VSP/VSG detection). *If the user normally makes copies with a high proportion of black, reduce the interval.*	0 ~ 500 1 copy/step **50 copies**

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
2-220	VREF Manual Setting				
			*	Adjusts the TD sensor reference voltage (VREF). *Change this value after replacing the development unit with another one that already contains toner.* *For example, when using a development unit from another machine for test purposes, do the following:* *1. Check the value of SP2-220 in both the machine containing the test unit and the machine that you are going to move it to.* *2. Install the test development unit, then input the VREF for this unit into SP2-220.* *3. After the test, put back the old development unit, and change SP2-220 back to the original value.*	1.60 ~ 3.50 0.01V/step **2.5 V**
2-223	VT Display				
			*	Displays the current TD sensor output voltage.	
2-301	Transfer Current Adjustment				
	1	1st copy	*	Adjusts the current applied to the transfer belt during copying on the 1st side of the paper. *If the user uses thicker paper, the current may have to be increased to ensure sufficient transfer of toner.*	15 ~ 200 1 µA/step **60 µA**
	2	2nd Copy	*	Adjusts the current applied to the transfer belt during copying on the 2nd side of the paper. *See above.*	15 ~ 200 1 µA/step **60 µA**
	3	By-pass Tray	*	Adjusts the current applied to the transfer belt during copying from the by-pass feed table. *See above. If the user normally feeds thicker paper from the bypass tray, use a higher setting.*	15 ~ 200 1 µA/step **70 µA**
	4	Post Card	*	Adjusts the current applied to the transfer belt during copying on post cards from the by-pass feed table. *The post card mode is selected when the by-pass tray is selected and the width is detected as A6.*	15 ~ 200 1 µA/step **150 µA**
	5	Between Papers	*	Adjusts the current applied to the transfer belt between the pages.	15 ~ 200 1 µA/step **15 µA**

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
2-506	Cleaning Interval – Multiple Copy				
	1	Operation	*	Selects whether multiple copy jobs are stopped at regular intervals for the following purposes. 1. Stop and turn the drum motor in reverse to clean the cleaning blade edge 2. Make an ID sensor pattern to correct the toner density control. The interval depends on SP2-506-2. Use if the drum gets dirty or images get too pale or too dark during a long job.	**1 : No** 2 : Yes
	2	Interval	*	Selects the interval at which multi copy jobs are stopped.	1 ~ 100 1 minute/step **15 minutes**
2-801	TD Sensor Initial Setting				
			*	Performs the TD sensor initial setting. This SP mode controls the voltage applied to the TD sensor to make the TD sensor output about 2.5 V. After finishing this, the TD sensor output voltage is displayed. *Use this mode only after changing the TD sensor or the developer.*	Start
2-803	Corona Wire Cleaner On				
				Turns on the corona wire cleaner manually. *When copy density across the paper is uneven at EM, clean the wire with this mode.*	Start
2-804	Corona Wire Cleaner Operation Setting				
	1	On/Off		Selects whether corona wire cleaner operation is done. *When 'Operate' is selected, the period is set with SP2-804-2.*	**1:Operate (yes)** 0:Not operate (No)
	2	Operation Interval	*	Selects the operation interval of the corona wire cleaner.	100 ~ 10 k 100 print/step **5 k**
2-902	Printing Test Pattern				
	2	IPU Test Pattern		Prints the test patterns for the IPU chip. See section 4.2.3. for how to print test patterns. *This SP mode is useful for finding whether the SBICU or the SBU is defective. If the printout is not OK, the SBICU is defective.*	
	3	Printing Test Pattern		Prints the printer test patterns. See section 4.2.3. for how to print test patterns. Example: 10. Trimming Area *This SP mode is useful for finding whether the LDDR or the SBICU is defective. If the printout is not OK, the LDDR is defective.*	
2-906	Vcont Manual Setting				
			*	**Factory use only.**	**10 V**

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
2-909	Main Scan Magnification				
	1	Copier	*	Adjusts the magnification in the main scan direction for copy mode. *Use the "•" key to toggle between + and -. See "Replacement and Adjustment – Copy Image Adjustments" for details.*	- 2.0 ~+ 2.0 0.1 %/step **+ 0.0 %**
	2	Printer	*	Adjusts the magnification in the main scan direction when printing from a personal computer. *Use the "•" key to toggle between + and -. See "Replacement and Adjustment - Copy Image Adjustments" for details.*	- 2.0 ~+ 2.0 0.1 %/step **+ 0.0 %**
2-911	Transfer Current On/Off Timing				
	1	La(ON)	*	Adjusts the transfer current on timing at the leading edge.	-30 ~ +30 1 mm/step **0 mm**
	3	Lc(OFF)	*	Adjusts the transfer current off timing (for example: –5 mm is 5 mm after the trailing edge).	-30 ~ +30 1 mm/step **0 mm**
2-912	Drum Reverse Rotation Interval				
			*	**This SP mode is for designer use only. Do not change the value..**	0 ~ 300 20 ms/step **40 ms**
2-913	Test Pattern ID Adjustment				
				Adjusts the image density for printing test patterns (with SP2-902). Usually this SP mode is only used by designers. *The value is cleared when the main power switch is turned off and on.*	0 ~ 15 1/step **15**
2-920	LD Off Check				
				Checks whether the LD turns off or on when the front door is opened. 0 : On 1: Off ***Factory use only.***	
2-930	Transfer Belt Cleaning – DPI Change				
			*	**When resolution changes from 400 to 600 dpi, the LD writes a pattern on the drum. Toner is applied, and this must be cleaned off the belt. This SP mode determines whether bias is applied to the transfer belt cleaning bias roller at this time.**	**0 : No** 1 : Yes
2-961	Developer Initialization (Factory)				
				Factory use only.	

Mode No. (Class 1 , 2 & 3)				Function	Settings
2-962	Auto Process Control				
			*	Automatically adjusts the following process control factors. 1. ID sensor 2. Drum potential sensor 3. Charge grid voltage (by changing V_D) 4. LD power (by changing V_H) Before using this SP, auto process control should be on (SP3-901)	Start
				After changing the drum, ID sensor, drum potential sensor, LD unit, or toner density sensor, this SP should be used.	
2-963	Toner Supply From Toner Bottle				
				When installing a new machine, the following two process are done automatically. 1. Developer initialization 2. Forced toner supply (sends toner to the toner hopper)	Start
				Do not use this SP after replacing the developer. Use SP2-801 (developer initialization)	
2-964	Blade Protection				
	1	Pattern Interval	*	Selects the interval for applying a strip of toner across drum and transfer belt to prevent the drum cleaning blade and belt cleaning blade from peeling off.	0 ~ 50 1 /step **0 (not applied)**
	2	Pattern Density	*	Selects the LD power for making the toner strip on the drum and transfer belt to prevent the drum cleaning blade and belt cleaning blade from peeling off.	0 ~ 15 1 /step **1**
2-965	Toner Pump Adjustment				
	1	First Toner Waste Adjustment	*	**Factory use only**	0 ~ 100 1g /step **3 g**
	2	After First Toner Waste	*	**Factory use only**	0 ~ 100 1 g /step **3 g**
	3	Pump Clutch On Time	*	**Factory use only**	0 ~ 5 1 /step **2 s**
	4	Pump Motor On Time	*	**Factory use only**	0 ~ 20 1 s/step **6 s**
	5	Return to First Toner Waste	*	**Factory use only**	0 ~ 50 1 time/step **30 times**

Mode No. (Class 1 , 2 & 3)				Function	Settings
2-965	Toner Pump Adjustment				
	6	Aggregate of Toner Waste	*	**Factory use only**	
3-001	ID Sensor PWM Setting				
	1	ID Sensor PWM Setting	*	This SP mode is added to recover the machine when an SC condition occurs because ID Sensor Initial Setting is not done after doing an NVRAM Clear or replacing the NVRAM. Reset this SP to the factory setting in this case. *The PWM data is stored when ID Sensor Initial Setting is done.*	0 ~ 255 1/step **90**
	2	Initialization	*	Performs the ID sensor initial setting. The ID sensor output for the bare drum (V_{SG}) is adjusted to 4.0 ± 0.2V. *This SP mode should be performed after:* *1. Replacing or cleaning the ID sensor* *2. Replacing the NVRAM or doing an NVRAM clear* *3. Replacing the SBICU board*	Start
3-103	ID Sensor Output Display				
			*	Displays the current V_{SG} and V_{SP} output. V_{SP}= x.xx V V_{SG}= x.xx V *If the ID sensor does not detect the ID pattern, "V_{SP}=5.0V/V_{SG}=5.0V" is displayed and an SC code is generated.* *If the ID sensor does not detect the bare area of the drum, "V_{SP}=0.0V/V_{SG}=0.0V" is displayed and an SC code is generated.*	
3-901	Auto Process Control				
			*	Decides whether or not the machine checks and corrects the drum potential (V_D) and LD power when the fusing temperature is lower than 100°C at power-up.	**ON** OFF
3-902	Process Control Data Display				
	1	Auto Process Control (O: OFF, 1: ON)	*	Displays whether auto process control is on or off.	
	2	V_D	*	Displays the drum potential.	
	3	Half Tone V_H	*	Displays the drum potential in areas illuminated by the laser.	
	4	V_G	*	Displays the charge grid voltage which resulted from the latest V_D adjustment.	
	5	LD Power (Correction)	*	Displays the LD power correction value which resulted from the latest V_H adjustment.	
	6	V_{ID}	*	Displays the latest drum surface voltage measured on the ID sensor pattern.	

Mode No. (Class 1 , 2 & 3)				Function	Settings
4-008	Scanner Main Scan Magnification				
			*	Adjusts the magnification in the sub scan direction for scanning. If this value is changed, the scanner motor speed is changed. *Use the “•” key to toggle between + and -. See "Replacement and Adjustment - Copy Image Adjustments" for details.*	- 0.9 ~ + 0.9 0.1 %/step **+ 0.0 %**
4-010	Scanner Leading Edge Registration				
			*	Adjusts the leading edge registration for scanning. *(-): The image moves in the direction of the leading edge* *Use the “•” key to toggle between + and -. See "Replacement and Adjustment - Copy Image Adjustments" for details.*	- 9.0 ~ + 9.0 0.1 mm/step **+ 0.0 mm**
4-011	Scanner Side-to Side Registration				
			*	Adjusts the side-to-side registration for scanning. *(-): The image disappears at the left side.* *(+): The image appears at the left side.* *Use the “•” key to toggle between + and -. See "Replacement and Adjustment - Copy Image Adjustments" for details.*	- 6.0 ~ + 6.0 0.1 mm/step **+ 0.0 mm**
4-012	Scanner Erase Margin				
	1	Leading Edge	*	Adjusts the leading edge erase margin for scanning. *Do not adjust this unless the user wishes to have a scanner margin that is greater than the printer margin.*	0.0 ~ 0.9 0.1 mm/step **0.5 mm**
	2	Trailing Edge	*	Adjusts the trailing edge erase margin for scanning. *See the comment for SP 4-012-1.*	0.0 ~ 0.9 0.1 mm/step **0.5 mm**
	3	Left	*	Adjusts the left side erase margin for scanning. *See the comment for SP 4-012-1.*	0.0 ~ 0.9 0.1 mm/step **0.5 mm**
	4	Right	*	Adjusts the right side erase margin for scanning. *See the comment for SP 4-012-1.*	0.0 ~ 0.9 0.1 mm/step **0.5 mm**
4-013	Scanner Free Run				
				Performs a scanner free run with the exposure lamp on.	**0: Stop** 1: Start

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
4-301	APS Sensor Output Display				
				Displays the APS sensor output signals when an original is placed on the exposure glass. Bit 0: Width sensor 1 Bit 1: Width sensor 2 Bit 2: Width sensor 3 Bit 3: Length sensor 1 Bit 4: Length sensor 2 See “Detailed Section Descriptions – Original Size Detection in Platen Mode” for more details.	00000000 0: Not detected 1: Detected
4-303	APS A5/HLT Size Original Detection				
			*	Selects whether or not the copier determines that the original is A5/HLT size when the APS sensor does not detect the size. *If "A5 length/5 1/2" x 8 1/2" is selected, paper sizes that cannot be detected by the APS sensors are regarded as A5 lengthwise or 5 1/2" x 8 1/2".* *If "Not detected" is selected, "Cannot detect original size" will be displayed.*	**0: Not detected** 1: A5 length / 5 1/2" x 8 1/2"
4-428	Scanner Adjustment				
	1	Flag Display	*	Displays whether or not the standard white level adjustment has been done.	Adjusted Not adjusted
	2	Standard		Corrects the standard white level from the white plate. ***This SP mode is for factory use only. Do not use this SP mode.***	Start
4-901	SBU Adjustment				
	1	E/O Adjustment – E ch	*	Checks the difference value of the black level for the EVEN channel after adjusting the black level at power-up. ***This SP mode is for designer use only. Do not use this SP mode.***	0 ~255 1/step **147**
	2	E/O Adjustment – O ch	*	Checks the difference value of the black level for the ODD channel after adjusting the black level at power-up. ***This SP mode is for designer use only. Do not use this SP mode.***	0 ~255 1/step **127**
	3	Bk Adjustment - E ch	*	Checks the value of the black level for the EVEN channel after adjusting the black level at power-up. ***This SP mode is for designer use only. Do not use this SP mode.***	0 ~ 255 1/step **127**
	4	Bk Adjustment - O ch	*	Checks the value of the black level for the ODD channel after adjusting the black level at power-up. ***This SP mode is for designer use only. Do not use this SP mode.***	0 ~ 255 1/step **145**

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
4-901	SBU Adjustment				
	5	Digital Gain Adjustment – E ch	*	Checks the AGC gain value of the white level for the EVEN channel after adjusting the white level at power-up. ***This SP mode is for designer use only. Do not use this SP mode.***	0 ~ 1 1/step **0**
	6	Digital Gain Adjustment – O ch	*	Checks the AGC gain value of the white level for the ODD channel after adjusting the white level at power-up. ***This SP mode is for designer use only. Do not use this SP mode.***	0 ~ 1 1/step **0**
	7	Analog Gain Adjustment – E ch	*	Checks the AGC gain value of the white level for the EVEN channel after adjusting the white level at power-up. ***This SP mode is for designer use only. Do not use this SP mode.***	0 ~ 255 1/step **46**
	8	Analog Gain Adjustment – O ch	*	Checks the AGC gain value of the white level for the ODD channel after adjusting the white level at power-up. ***This SP mode is for designer use only. Do not use this SP mode.***	0 ~ 255 1/step **46**
	9	Standard White Level Adjustment	*	Checks the value of the standard white level after adjusting the white level. ***This SP mode is for factory use only. Do not use this SP mode.***	0 ~ 255 1/step **110**
	10	A/D Standard Voltage in AE Mode	*	Adjusts the upper limit voltage for A/D conversion in ADS mode. ***This SP mode is for designer use only. Do not use this SP mode.***	0 ~ 255 1/step **191**
	11	Image Data Path Setting		***This SP mode is for designer use only. Do not change the value.***	**0**
	12	Gain Adjustment - E ch	*	Checks the AGC gain value of the white level for the EVEN channel after adjusting the white level in the factory. ***This SP mode is for factory use only. Do not use this SP mode.***	INIT_GAIN(E) = b7;**023**
	13	Gain Adjustment - O ch	*	Checks the AGC gain value of the white level for the ODD channel after adjusting the white level in the factory. ***This SP mode is for factory use only. Do not use this SP mode.***	INIT_GAINO = b7;**023**
	14	Standard White Level Adjustment at Factory	*	Checks the value of the standard white level in the factory. ***This SP mode is for factory use only. Do not use this SP mode.***	INIT_REF = **110**
	15	Overflow Flag		Checks the overflow flag data during the automatic scanner adjustment. ***This SP mode is for designer use only.***	OFO/SGDO = **0000** OFE/SGDO = **0000**

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
4-901	SBU Adjustment				
	16	Time Out Flag		Checks the time out flag data during the automatic scanner adjustment. ***This SP mode is for designer use only.***	TIME OUT/SGDO = **0000**
	17	Error Flag		Checks the error flag data during the automatic scanner adjustment. ***This SP mode is for designer use only.***	GAIN/OET = **000** REF/OT=**00**
	18	White Level Data		Checks either the maximum or minimum white shading data. ***This SP mode is for designer use only.***	0: Maximum 1: Minimum
4-903	Filter Setting				
	2	Filter Mode Setting	*	**This SP mode is designer use only.** ***Do not change the value.***	0 ~ 3 **0**
	5	Full Size Mode		Selects whether the copy is always in full size mode even if the magnification ratio has been changed. *Set to 1 when checking the magnification in the main scan direction. If the magnification is not 100%, something is wrong with the image processing circuits.*	**0: Normal operation** 1: Always full size mode
	7	Image Shift in Magnification Mode		Adjusts the pixel shift amount in the main scan direction in magnification mode. ***This SP mode is for designer use only.***	0 ~ 5120 1/step **0**
	11	Filter Level (25% ~ 64%)	*	Selects the MTF filter coefficient in the main scan direction for 25% ~ 64% reduction for text mode. 0:Weak 6:Strong *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0 ~ 6 1/step **1**
	12	Filter Level (65% ~ 154%)	*	Selects the MTF filter coefficient in the main scan direction for 65% ~ 154% magnification for text mode. 0:Weak 6:Strong *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0 ~ 6 1/step **2**
	13	Filter Level (155% ~ 256%)	*	Selects the MTF filter coefficient in the main scan direction for 155% ~ 256% enlargement for text mode. 0:Weak 6:Strong *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0 ~ 6 1/step **5**
	14	Filter Level (257% ~ 400%)	*	Selects the MTF filter coefficient in the main scan direction for 257% ~ 400% enlargement for text mode. 0:Weak 6:Strong *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0 ~ 6 1/step **6**

Mode No. (Class 1 , 2 & 3)				Function	Settings
4-903	Filter Setting				
	15	MTF Filter in Photo Mode	*	Selects the MTF filter coefficient for photo mode, if MTF is enabled for this mode with SP 4-904-3. 0:Weak 4:Strong *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0 ~ 4 1/step **2**
	16	Smoothing Filter in Photo mode	*	Selects the smoothing filter coefficient for photo mode. 0:Weak 7:Strong *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0 ~ 7 1/step **1**
	17	Filter Level – Text/Photo Mode		Selects the MTF filter coefficient for text areas in text/photo mode. 0:Use the filter coefficient and strength level for letter mode. 1:Weak 5:Strong *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0 ~ 5 1/step **0**
	18	Filter Level in Pale Mode	*	Selects the table of the MTF filter coefficient for pale original mode 0:Use the filter coefficient level for text mode. 1:Weak 5:Strong *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0 ~ 5 1/step **0**
	19	Level in Generation Copy	*	Selects the MTF filter coefficient for generation copy mode 0:Use the filter coefficient level for text mode. 1:Weak 5:Strong *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0 ~ 5 1/step **3**
	20	Filter Strength (25% ~ 64%)	*	Selects the MTF strength in the main scan direction for 25% ~ 64% reduction for text mode. *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0: x 0.25 1: x 0.5 **2: x 1** 3: x 2 4: x 4
	21	Filter Strength (65% ~ 154%)	*	Selects the MTF strength in the main scan direction for 65% ~ 154% magnification for text mode. *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0: x 0.25 1: x 0.5 **2: x 1** 3: x 2 4: x 4
	22	Filter Strength (155% ~ 256%)	*	Selects the MTF strength in the main scan direction for 155% ~ 256% enlargement for text mode. *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0: x 0.25 **1: x 0.5** 2: x 1 3: x 2 4: x 4

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
4-903	Filter Setting				
	23	Filter Strength (257% ~ 400%)	*	Selects the MTF strength in the main scan direction for 257% ~ 400% enlargement for text mode. *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0: x 0.25 **1: x 0.5** 2: x 1 3: x 2 4: x 4
	28	Independent Dot Erase – Text Mode	*	Selects the independent dot erase level for text mode. *Refer to "Detailed Section Description – Independent Dot Erase" for details.*	0 ~ 15 1/step **2**
	30	Independent Dot Erase – Text/Photo Mode	*	Selects the independent dot erase level for text/photo mode. *Refer to "Detailed Sectional Description – Independent Dot Erase" for details.*	0 ~ 15 1/step **9**
	31	Independent Dot Erase - Pale Mode	*	Selects the independent dot erase level for pale mode. *Refer to "Detailed Section Description – Independent Dot Erase" for details.*	0 ~ 15 1/step **1**
	32	Independent Dot Erase - Generation Copy Mode	*	Selects the independent dot erase level for generation copy mode. *Refer to "Detailed Sectional Description – Independent Dot Erase" for details.*	0 ~ 15 1/step **1**
	33	Scanner Gamma Thresh Level - Text	*	Adjust the threshold level for the background erase function in letter mode. *A larger value reduces dirty background. This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0 ~ 255 1/step **15**
	34	Scanner Gamma Thresh Level - Text/Photo	*	Adjust the threshold level for the background erase function in text/photo mode. *A larger value reduces dirty background. This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0 ~ 255 1/step **15**
	35	Scanner Gamma Thresh Level - Generation Copy	*	Adjust the threshold level for background erase in generation copy mode. *A larger value reduces dirty background. This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0 ~ 255 1/step **15**
	41	MTF Filter Level (25% ~ 64%)	*	Selects the MTF filter coefficient in the sub scan direction for 25% ~ 64% reduction for text mode. 0:No filter, 1:Weak 8:Strong *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0 ~ 8 1/step **3**
	42	MTF Filter Level (65% ~ 154%)	*	Selects the MTF filter coefficient in the sub scan direction for 65% ~ 154% magnification for text mode. 0:No filter, 1:Weak 8:Strong *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0 ~ 8 1/step **4**

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
4-903	Filter Setting				
	43	MTF Filter Level (155% ~ 256%)	*	Selects the MTF filter coefficient in the sub scan direction for 155% ~ 256% enlargement for text mode. 0:No filter 1:Weak 8:Strong *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0 ~ 11 1/step **3**
	44	MTF Filter Level (257% ~ 400%)	*	Selects the MTF filter coefficient in the sub scan direction for 257% ~ 400% enlargement for text mode. 0:No filter, 1:Weak 8:Strong *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0 ~ 8 1/step **8**
	47	Filter Type in Photo Area (Text/Photo mode)	*	Selects the MTF or smoothing filter coefficient for photo areas in text/photo mode. 0:MTF Filter – Weak 1:MTF Filter – Medium 2:MTF Filter – Strong 3:No filter 4:Smoothing Filter – Weak 5:Smoothing Filter – Medium 4:Smoothing Filter – Strong *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0 ~ 6 1/step **2**
	50	MTF Filter Strength (25% ~ 64%)	*	Selects the MTF strength in the sub scan direction for 25% ~ 64% reduction in text mode. *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0: x 0.25 1: x 0.5 **2: x 1** 3: x 2 4: x4
	51	MTF Filter Strength (65% ~ 154%)	*	Selects the MTF strength in the sub scan direction for 65% ~ 154% magnification in text mode. *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0: x 0.25 1: x 0.5 **2: x 1** 3: x 2 4: x 4
	52	MTF Filter Strength (155% ~ 256%)	*	Selects the MTF strength in the sub scan direction for 155% ~ 256% enlargement in text mode. *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0: x 0.25 1: x 0.5 **2: x 1** 3: x 2 4: x 4
	53	MTF Filter Strength (257% ~ 400%)	*	Selects the MTF strength in the sub scan direction for 257% ~ 400% enlargement in text mode. *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0: x 0.25 1: x 0.5 2: x 1 3: x 2 **4: x 4**

Mode No. (Class 1 , 2 & 3)				Function	Settings
4-904	IPU Setting -1				
	1	Laser Pulse Positioning in Text and Text/Photo	*	Selects whether or not laser pulse positioning control is used in text and text/photo modes ***Do not change the value.***	0: Off **1: On**
	2	Dither Matrix Selection	*	Selects the dither matrix for photo mode when SP4-904-24 is “2”. *If “0” is selected, the image will be sharper.* *This SP is ignored unless the user selects ‘SP Mode Changed’ in UP mode.*	0: 4 x 4 **1: 6 x 6**
	3	Filter Type Selection - Photo Mode	*	Selects the filter type for photo mode. *Coefficients used:* *0: SP4-903-15, 1: SP4-903-16* *If “0” is selected, the image will be sharper. However, dot screen areas will be faint.* *This SP is ignored unless the user selects ‘SP Mode Changed’ in UP mode.*	0: MTF **1: Smoothing**
	6	Generation Mode	*	Selects the line width correction type for generation copy mode. *In copied original mode, lines may bulge in the main scan direction. Adjust this SP mode until the result is satisfactory.* *This SP is ignored unless the user selects ‘SP Mode Changed’ in UP mode.*	0: Not corrected 1: Thin line-1 **2: Thin line-2** 3: Thick line
	7	Gradation Process in Text Area	*	Selects the process used for text areas in text/photo mode. 0: 1-dot grayscale **1: 1-dot – 9 level error diffusion** *If “1” is selected, the image becomes sharper in focus. However, gradation will be reduced.* *This SP is ignored unless the user selects ‘SP Mode Changed’ in UP mode.*	
	8	Gradation Process in Photo Area	*	Selects the process used for photo areas in text/photo mode. 0: 1-dot grayscale 1: 1-dot – 9 level error diffusion 2: 2-dot grayscale **3: 2-dot – 17 level error diffusion** *As the setting increases from 1 to 3, the image becomes sharper in focus. However, gradation will be reduced.* *This SP is ignored unless the user selects ‘SP Mode Changed’ in UP mode.*	
	9	Image Data Path		Selects one of the following video data outputs, which will be used for printing. 0: After image scanning 1: After image data form application 2: After gradation processing 3: Test pattern **4: Normal video processing** ***Do not change the value.***	

Mode No. (Class 1 , 2 & 3)				Function	Settings
4-904	IPU Setting -1				
	12	Binary Thresh Level	*	Not used in this machine	0 ~ 255 1/step **128**
	18	Binary Dither Pattern (Number of lines)	*	Not used in this machine	**0: 70 (8x8)** 1: 95 (6x6) 2: 140 (8x8) 3: 180 (8x8)
	23	Binary Error Diffusion Pattern	*	Not used in this machine. ***Do not change the value.***	**0: Matrix 1** 1: Matrix 2
	24	Grayscale Process - Photo Mode	*	Select the processing type in photo mode. **0: 2-dot/1-dot error diffusion (text/photo separation)** 1: 2-dot error diffusion 2: Dither processing *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	
4-905	Image Data Path				
	1	Image Data Path – Filtering/Magnification		Selects one of the following video data outputs, which will be used for printing. 0: Filtering → Magnification 1: Magnification → Filtering 2: Filtering only 3: Magnification only 4: No processing **5: Normal operation** ***Do not change the value.***	
	2	Image Data Path – Gradation		Selects one of the following video data outputs, which will be used for gradation processing. 0: After image scanning 1: After MSU 2. No printer gamma **3: Normal operation** ***Do not change the value.***	
	4	Printout Type Selection		Selects one of the following video data outputs, which will be used for the printer controller. **0: Normal operation** 1: Not printed out 2: Black/white conversion ***Do not change the value.***	
4-906	Image Processing Priority in Text/Photo Mode				
			*	Selects either text priority or photo priority for text/photo mode. Photo priority: Background erase is off Letter priority: Background erase is on. *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0: Photo priority **1: Letter priority**
4-907	Text/Photo Auto Separation Method				
			*	Selects whether auto text/photo separation is done before error diffusion in text/photo mode. *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0: No **1: Yes**

Mode No. (Class 1 , 2 & 3)				Function	Settings
4-908	Text/Photo Separation Method				
			*	Select the text/photo separation processing type during the auto text/photo separation stage. *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	**0: Letter and photo filters** 1: Text filter only 2: Photo filter only
4-909	IPU Setting - 2				
	1	Laser Pulse Position Threshold	*	Decides the threshold level for selecting the type of laser pulse width modulation that is used ***Do not change the value.***	0 ~255 1/step **32**
	2	Thin Line Level 1 - White	*	Decides the threshold value for a pixel to be white when line width correction type 1 is performed. ***Do not change the value.***	0 ~ 15 1 /step **3**
	3	Thin Line Level 1 - Black	*	Decides the threshold value for a pixel to be black when line width correction type 1 is performed. ***Do not change the value.***	0 ~ 15 1 /step **13**
	4	Thin Line Level 2 - White	*	Decides the threshold value for a pixel to be white when line width correction type 2 is performed. ***Do not change the value.***	0 ~ 15 1 /step **4**
	5	Thin Line Level 2 - Black	*	Decides the threshold value for a pixel to be black when line width correction type 2 is performed. ***Do not change the value.***	0 ~ 15 1 /step **12**
	6	Error Diffusion Table	*	Selects the gamma table for error diffusion. ***Do not change the value.***	**0: Gamma table 0** 1: Gamma table 1
	7	Edge Detection 1	*	Decides the threshold value for detecting an edge. ***Do not change the value.***	0 ~ 255 1 /step **128**
	8	Edge Detection 2	*	Decides the threshold value for detecting an edge. ***Do not change the value.***	0 ~ 255 1 /step **128**
	19	Image Data Path - Application		Selects one of the following video data outputs, which will be used for application. 0: After image scanning 1: After image processing 2: After MSU **3: Normal operation** ***Do not change the value.***	

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
4-909	IPU Setting - 2				
	20	Image Data Path - Printing		Selects one of the following video data outputs, which will be used for printing. 0: After image processing 1: After MSU 2: From application **3: Normal operation** ***Do not change the value.***	
4-910	Data Compression				
	1	Data Compression		**Designer use only** ***Do not change the value.***	**0: ON** 1: OFF
	2	Data Compression Threshold		**Designer use only** ***Do not change the value.***	0 ~ 255 1/step **8**
	3	ABS Core		**Designer use only** ***Do not change the value.***	**0: ON** 1: OFF
4-911	HDD				
	1	HDD Media Check		Checks for bad sectors on the hard disk that develop during machine use. This takes 4 minutes. *This SP mode should be done when an abnormal image is printed. There is no need to do this at installation as the hard disk firmware already contains bad sector information, and damage is not likely during transportation.* *Bad sectors detected with this SP mode will be stored in the NVRAM with the bad sector data copied across from the firmware.* *If the machine detects over 50 bad sectors, SC361 will be generated. At this time, use SP4-911-2.*	Start
	2	HDD Formatting		Formats the hard disk. This takes 4 minutes. **Do not turn off the main power switch during this process.**	
	6	HDD Bad Sector Information Reset		Resets the bad sector information which is stored in the NVRAM. *This SP should be used when the hard disk is replaced.*	Start
	7	HDD Bad Sector Display	*	Displays the number of bad sectors there are on the hard disk. *If the machine detects a total of over 50 bad sectors on the disk, SC361 will be generated. At this time, use SP4-911-2.*	Total: 0 Copy: 0 Printer: 0 Copy Server: 0
	8	HDD Model Name Display		Displays the model name of the HDD. *If the HDD is not installed or the HDD connector is not connected, SC360 will be displayed. However, the user can make single copies.*	

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
4-912	Text/Photo Separation Setting				
	1	MTF Filter (Sub Scan) – Edge	*	Selects the strength of the MTF filter (sub scan) for edge detection in text/photo separation processing. *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0 ~ 7 1/step **0**
	2	MTF Filter (Main Scan) – Edge	*	Selects the strength of the MTF filter (main scan) for edge detection in text/photo separation processing. *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0 ~ 7 1/step **0**
	3	White Threshold Level – Edge Detection	*	Selects the threshold level for white for edge detection in letter/photo separation processing. *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0 ~ 255 1/step **16**
	4	Gray Threshold Level – Edge Detection	*	Selects the threshold level for gray for edge detection in letter/photo separation processing. *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0 ~ 255 1/step **32**
	5	Black Threshold Level – Edge Detection	*	Selects the threshold level for black for edge detection in letter/photo separation processing. *This SP is ignored unless the user selects 'SP Mode Changed' in UP mode.*	0 ~ 255 1/step **120**
	6	Peak Thresh Level Change	*	***This SP mode is for designer use only.***	0 ~ 255 1/step **80**
	7	Bottom Thresh Level Change	*	***This SP mode is for designer use only.***	0 ~ 255 1/step **155**
	8	H. Max. Thresh Level (Sub Scan) – Half Tone	*	***This SP mode is for designer use only.***	0 ~ 255 1/step **16**
	9	L. Max. Thresh Level (Sub Scan) – Half Tone	*	***This SP mode is for designer use only.***	0 ~ 255 1/step **30**
	10	H. Min. Thresh Level (Sub Scan) – Half Tone	*	***This SP mode is for designer use only.***	0 ~ 255 1/step **40**
	11	L. Min. Thresh Level (Sub Scan) – Half Tone	*	***This SP mode is for designer use only.***	0 ~ 255 1/step **20**
	12	H. Max. Thresh Level (Main Scan) – Half Tone	*	***This SP mode is for designer use only.***	0 ~ 255 1/step **16**

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
4-912	Text/Photo Separation Setting				
	13	L. Max. Thresh Level (Main Scan) – Half Tone	*	***This SP mode is for designer use only.***	0 ~ 255 1/step **30**
	14	H. Min. Thresh Level (Main Scan) – Half Tone	*	***This SP mode is for designer use only.***	0 ~ 255 1/step **40**
	15	L. Min. Thresh Level (Main Scan) – Half Tone	*	***This SP mode is for designer use only.***	0 ~ 255 1/step **20**
	16	5x3 Block Thresh Level – Half Tone	*	***This SP mode is for designer use only.***	0 ~ 15 1/step **2**
	17	Half Tone Separation Level	*	Selects the dot screen detection level. 0. Setting of SP4-921-008 ~015 1. Letter priority – strong 2. Letter priority – weak 3. Standard 4. Photo priority – weak 5. Photo priority – strong *Do not use ‘0’; this is for factory use only.*	0 ~ 5 1/step **3**
	18	Effective Magnification Ratio	*	Selects the maximum magnification that can be used with dot screen detection.	100 ~ 400 1/step **109**
5-009	Language Selection				
			*	Selects the operation panel language. *A language card is required except for English, German and Italian.* *After changing the setting for this SP mode, turn the main power switch off and on.*	
5-019	Tray Paper Size Selection				
	5	LCT	*	Selects the paper size in the optional LCT.	A4 LT B5
5-024	mm/inch Display Selection				
			*	Selects what unit is used. *After selecting the unit, turn the main power switch off and on.*	**0: mm** 1: inch
5-104	A3/DLT Double Count				
			*	Specifies whether the counter is doubled for A3/11"x17" paper. *If "1" is selected, the total counter and the current user code counter count up twice when A3/11"x17" paper is used.*	**NO** YES
5-106	ID Shift Level				
	6	ADS Level Selection	*	Selects the image density level that is used in ADS mode.	1 ~ 7 1 notch /step **4**

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
5-112	Non-standard Paper Selection				
			*	Selects whether a non-standard paper size can be input for tray 2 (universal tray) or not.	**NO** YES
				If "1" is selected, the customer will be able to input a non-standard paper size using a UP mode.	
5-113	Optional Counter Type				
			*	**This SP is for Japan only. Do not change the value.**	0 ~ 5 1/step **0**
5-118	Disable Copying				
			*	Selects whether the copy function is disabled or not when printer controller is installed.	**0: No** 1: Yes
5-120	M/C Option Counter Removal				
			*	**This SP is for Japan only. Do not change the value.**	0 ~ 2 1/step **0**
5-121	Counter Up Timing				
			*	Determines whether the optional key counter counts up at paper feed-in or at paper exit.	**0: Feed-in** 1: Exit
				The total counter is not affected by this SP mode.	
5-127	APS Mode				
			*	Selects whether the APS function is enabled or not.	NO **YES**
5-131	Paper Size Type Selection				
			*	Selects the paper size type (for originals and copy paper). (Only needs to be adjusted if the optional printer controller is installed)	0: Japan **1: North America** **2: Europe**
				• *After changing the value, turn the main power switch off and on.* • *If the paper size type of the archive files stored in the HDD is different, abnormal copies will be made. So, after changing this setting, perform SP5-822 and ask the user to restore the archive files.*	
5-501	PM Alarm Interval				
			*	Sets the PM interval, with an alarm.	0 ~ 255 1k copies/step **0 k copies**
				When set to "0", the alarm is disabled.	
5-504	Jam Alarm Level(RSS function)				
	1	Jam Alarm Level	*	**Japanese version only. Do not change the values.**	0: No 1: L 2: M **3: H**

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
5-504	Jam Alarm Level(RSS function)				
	2	Jam Auto Call (RSS function)	*	**Japanese version only.** **Do not change the values.**	0: Off **1: On**
5-505	Error Alarm Level				
			*	**Japanese version only.** **Do not change the values.**	0 ~ 255 100 copies/step
5-507	Paper Supply Call Level				
	128	Others	*	**Japanese version only.** **Do not change the values.**	250 ~ 10000 1 page/step **1000 pages**
	132	A3	*		
	133	A4	*		
	134	A5	*		
	141	B4	*		
	142	B5	*		
	160	DLT	*		
	164	LG	*		
	166	LT	*		
	172	HLT	*		
5-590	Auto Call Setting				
	1	Original Count	*	**Japanese version only.** **Do not change the values.**	**0: Off** 1: On
	2	Door Open	*		
	3	Paper Supply	*		
	4	Stapler Supply	*		
	5	Toner Supply	*		
5-801	Memory All Clear				
				Resets all correction data for process control and all software counters. Also, returns all modes and adjustments to the default settings. See the "Memory All Clear" section for how to use this SP mode correctly. Touch “Start” for over 3 seconds, then turn the main power switch off and on.	Start
				Normally, this SP mode should not be used. *It is used only after replacing the NVRAM, or when the copier malfunctions due to a damaged NVRAM.* The LCD coordinates are also cleared, see “LCD Touch Panel Calibration”.	

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
5-802	Printer Free Run				
			*	Performs a free run. The scanner scans once and the printer prints for the number of copies requested. *To perform the free run, select "ON"* *1) Select "ON".* *2) Select "Exit".* *3) Select "Copy Mode".* *4) Make the required settings (such as the number of copies.).* *5) Press the Start key.* *After finishing the free run, return this SP to "OFF"*	**OFF** ON
5-803	Input Check				
	1 ~ 14			Displays the signals received from sensors and switches. See the "Input Check" section for details.	
5-804	Output Check				
	1 ~ 97			Turns on the electrical components individually for test purposes. See the "Output Check" section for details.	ON OFF
5-807	Option Connection Check				
	1	ADF		Checks the connectors to the optional peripherals.	0: Not connected 1: Connected
	2	Bank			
	3	LCT			
	4	Finisher			
5-811	Machine Serial Number				
			*	Use to input the machine serial number. (Normally done at the factory.) *This serial number will be printed on the system parameter list.* *Use the " •" key to input "A".*	
5-812	Service Tel. No. Setting				
	1	Service Telephone Number at SC Condition	*	Use this to input the telephone number of the service representative (this is displayed when a service call condition occurs.) *Press the " •" key to input a pause.* *Press the "Clear modes" key to delete the telephone number.*	
	2	Service Fax Number for Counter Printing	*	Use this to input the fax number of the service representative (this is printed on the Counter Report – UP mode, System No.19) *Press the " •" key to input a pause.* *Press the "Clear modes" key to delete the telephone number.*	
5-816	CSS Function				
	1	Function Setting	*	**Japanese version only.** **Do not change the values.**	**Off** On
	2	CE Call	*	**Japanese version only.** **Do not change the values.**	**Off** On

Mode No. (Class 1 , 2 & 3)				Function	Settings
5-821	CSS PI Device Code				
			*	**Japanese version only.** **Do not change the value.**	0 ~ 4 1/step **0**
5-822	Server Data Clear				
			*	Clears all archive file data stored in the HDD. (A printer controller is required for the archive file feature.) *Before (or after) performing SP5-131, do this SP mode. After this, ask the user to restore the archive files.*	Start
5-907	Plug & Play (Brand Name and Production Name Setting)				
				Selects the brand name and the production name for Windows 95 Plug & Play. This information is stored in the NVRAM. If the NVRAM is defective, these names should be registered again. *After selecting, press the "Original Type" key and "#" key at the same time. When the setting is completed, the beeper sounds five times.*	
5-914	Printer Counter Display				
			*	Selects whether or not the total printer counter is displayed in the UP mode.	**Off** On
5-915	Mechanical Counter Detection				
				Checks whether the mechanical counter inside the inner cover is connected or not.	0: Not detected 1: Detected 2: Unknown
5-920	Low Power Mode Recovery Time				
			*	Determines the recovery time from low power mode. 177°C: Approx. 20s 170°C: Approx. 30s	170 ~ 185 1°C /step **177°C**
5-940	Copy Server Password Display				
			*	Selects whether to display the password when a file with a password is selected on the copy server.	**Normal** Display password
5-990	SMC Print				
	1	All		Prints all the system parameter lists. See the "System Parameter and Data Lists" section for how to print the lists.	Start
	2	SP		Prints the SP mode data list. See the "System Parameter and Data Lists" section for how to print the lists.	Start
	3	User Program		Prints the UP mode data list. See the "System Parameter and Data Lists" section for how to print the lists.	Start
	4	Logged Data		Prints the machine status history data list. See the "System Parameter and Data Lists" section for how to print the lists.	Start

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
5-990	SMC Print				
	5	Copy Program No. 10		Prints the Copy Mode list (UP Mode No.10) See the "System Parameter and Data Lists" section for how to print the lists.	Start
	6	SP (Large Font)		Prints the SP mode data list with a large font size. See the "System Parameter and Data Lists" section for how to print the lists. *Use SP mode when sending the SMC list by fax.*	Start
6-006	DF Registration Adjustment				
	1	Side-to-Side	*	Adjusts the printing side-to-side registration in the ADF mode. *Use the " •" key to toggle between + and -.*	-3 ~ +3 0.1 mm/step **+ 0.0 mm**
	2	Leading Edge (Thin Original)	*	Adjusts the original stop position. *Use the " •" key to toggle between + and -.*	-29 ~ +29 0.18 mm/step **+ 0.0 mm**
	3	Leading Edge (Duplex-front)	*	Adjusts the original stop position against the original left scale in one-sided original mode. *Use the " •" key to toggle between + and -.*	-29 ~ +29 0.18 mm/step **+ 0.0 mm**
	4	Reading Edge (Duplex-rear)	*	Adjusts the original stop position against the original left scale in two-sided original mode. *Use the " •" key to toggle between + and -.*	-29 ~ +29 0.1 mm/step **+ 0.0 mm**
6-007	ADF Input Check				
	1	Group 1		Displays the signals received from sensors and switches of the ADF. See the "Input Check" section for details.	
	2	Group 2		Displays the signals received from sensors and switches of the ADF. See the "Input Check" section for details.	
6-008	ADF Output Check				
				Turns on the electrical components of the ADF individually for test purposes. See the "Output Check" section for details.	
6-009	ADF Free Run (Two-sided original)				
	1			Performs an ADF free run in two-sided original mode. Press "1" to start. *This is a general free run controlled from the copier. For more detailed free run modes, see the 'Test Points/Dip Switches/LEDs' section.*	**OFF** ON

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
6-105	Stapling Position Adjustment				
			*	Adjusts the stapling position in the main scan direction	- 1~ +3.5 0.5 mm/step **+0.0 mm**
				Use the “ •” key to toggle between + and -. A larger value causes the stapling position to shift outward.	
6-113	Punch Hole				
	1	2-Holes		Adjusts the punch hole position in the sub-scan direction for the punch unit with two punch holes.	- 7.5 ~ + 7.5 0.5 mm/step **0 mm**
				Use the “ •” key to toggle between + and -. A larger value shifts the punch holes towards the edge of the paper.	
	2	3-Holes		Adjusts the punch hole position in the sub-scan direction for the punch unit with three punch holes.	- 7.5 ~ + 7.5 0.5 mm/step **0 mm**
				Use the “ •” key to toggle between + and -. A larger value shifts the punch holes towards the edge of the paper.	

Mode No. (Class 1 , 2 & 3)				Function	Settings
7-001	Main Motor (Drum Motor) Operation Time				
			*	Displays the total drum rotation time.	Min.
7-002	Original Counter				
	1	Total	*	Displays the total number of fed originals.	
	2	Copy	*	Displays the total number of fed originals in copy mode.	
	3	Copy Server	*	Displays the total number of fed originals in copy server mode.	
7-003	Copy Counter				
	1	Total Count	*	Displays the total number of prints in all modes.	
	2	Copy	*	Displays the total number of prints in copy mode.	
	4	Printer	*	Displays the total number of prints in printer mode.	
7-006	C/O, P/O Counter				
	1	C/O	*	Displays the number of sets of copies per original when making 10 or more sets of copies. e.g.: When making 15 sets of copies of an original, this counter value will increase by "6".	
	2	P/O	*	Displays the number of sets of prints per original data when making 10 or more sets of prints. e.g.: When making 15 sets of prints of an original data, this counter value will increase by "6".	
7-101	Copy Counter – Paper Size				
	5	A4 Sideways	*	Displays the total number of prints by paper size.	
	6	A5 Sideways	*		
	14	B5 Sideways	*		
	38	LT Sideways	*		
	44	HLT Sideways	*		
	128	Other Sizes	*		
	132	A3	*		
	133	A4 Lengthwise	*		
	134	A5 Lengthwise	*		
	141	B4	*		
	142	B5 Lengthwise	*		
	160	DLT	*		
	164	LG	*		
	166	LT Lengthwise	*		
	172	HLT Lengthwise	*		
7-201	Total Scan Count				
			*	Displays the total number of scanned originals.	

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
7-202	Original Counter By Size				
	4	A3	*	Displays the total number of scanned originals by original size.	
	5	A4	*		
	6	A5	*		
	13	B4	*		
	14	B5	*		
	32	DLT	*		
	36	LG	*		
	38	LT	*		
	44	HLT	*		
	128	Other Sizes	*		
7-204	Copy Counter – Paper Tray				
	1	1st Paper Tray	*	Displays the total number of sheets fed from each paper feed tray.	
	2	2nd Paper Tray	*		
	3	3rd Paper Tray	*		
	4	4th Paper Tray	*	**4th tray - Japanese version only**	
	5	LCT	*		
	6	By-pass Feed	*		
7-205	Total ADF Counter				
			*	Displays the total number of originals fed by the ADF.	
7-206	Staple Counter				
			*	Displays the total number of staples used.	
7-207	Punch Counter				
			*	Displays the total number of hole punch operations.	
7-301	Total Copy By Reproduction Ratio				
	1	32% ~ 49%	*	Displays the total number of prints by reproduction ratio.	
	2	50% ~ 99%	*		
	3	100%	*		
	4	101% ~ 200%	*		
	5	201% ~ 400%	*		
	6	Direct Mag.	*		
	7	Direct Size Mag.	*		
	8	Size Mag.	*		
	9	Fixed Mag.	*		
7-304	Total Copies By Copy Mode				
	1	Letter	*	Displays the total number of prints by copy mode.	
	2	Letter/Photo	*		
	3	Photo	*		
	4	Generation	*		
	5	Pale	*		
	6	Punch	*		
	7	Multiple Copy	*		
	8	Sort	*		
	9	Staple	*		

Mode No. (Class 1 , 2 & 3)				Function	Settings
7-304	Total Copies By Copy Mode				
	10	Combine	*	Displays the total number of prints by copy mode.	
	11	Erase Copy	*		
	12	Duplex Copy	*		
	13	ADF	*		
	14	Double	*		
	15	2-sided Original	*		
	16	Interrupt	*		
	17	Combine Mode - 1 Side	*		
	18	Combine Mode - 2 Side	*		
	19	Mini Book Mode	*		
	20	Magazine Mode	*		
	21	Batch (SADF) Mode	*		
	22	Mixed Size Mode	*		
	23	Thin Original	*		
7-305	Total Copies in Multiple Copy Mode				
	1	1 to 1	*	Displays the total number of prints by multiple copy quantity.	
	2	1 to 2 ~ 5	*		
	3	1 to 6 ~ 10	*		
	4	1 to 11 ~ 20	*		
	5	1 to 21 ~ 50	*		
	6	1 to 51 ~ 100	*		
	7	1 to 100 ~ 300	*		
	8	1 to 301 ~	*		
7-306	Copy : Each Mode Job				
	1	Sort	*	Displays the total number of copy jobs that have been done for various modes.	
	2	Staple	*		
	3	Punch	*		
	4	Next Job	*		
	5	Sample Copy	*		
7-320	Copy Server : Scanned Storage				
	1	Total Number of Original Scan	*	Displays the total number of stored originals in the copy server.	
7-321	Copy Server : Each Size of Original				
	4	A3	*	Displays the total number of stored originals in the server by size.	
	5	A4	*		
	6	A5	*		
	13	B4	*		
	14	B5	*		
	32	DLT	*		
	36	LG	*		
	38	LT	*		

Mode No. (Class 1 , 2 & 3)				Function	Settings
7-321	Copy Server : Each Size of Original				
	44	HLT	*		
	128	Other Size	*		
7-323	Copy Server : Each Size of Cpies				
	5	A4 Sideways	*	Displays the total number of prints made from the copy server by paper size.	
	6	A5 Sideways	*		
	14	B5 Sideways	*		
	38	LT Sideways	*		
	44	HLT Sideways	*		
	128	Other Sizes	*		
	132	A3	*		
	133	A4 Lengthwise	*		
	134	A5 Lengthwise	*		
	141	B4	*		
	142	B5 Lengthwise	*		
	160	DLT	*		
	164	LG	*		
	166	LT Lengthwise	*		
	172	HLT Lengthwise	*		
7-324	Copy Server : Print Job				
	1	Duplex	*	Displays the total number of copy jobs made from the copy server.	
	2	Sort	*		
	3	Staple Print Job	*		
	4	Punch Print Job	*		
	5	Sample Copy	*		
	6	First Page Print	*		
7-325	Copy Server : Print Job Page Distribution				
	1	1	*	Displays the number of jobs by number of pages, made from the copy server.	
	2	2	*		
	3	3 - 5	*		
	4	6 - 10	*		
	5	11 -	*		
7-326	Copy Server : Print Job File Distribution				
	1	1	*	Displays the number of jobs by the number of consecutive files in the job, made from the copy server.	
	2	2 - 5	*		
	3	6 - 10	*		
	4	11 -	*		
7-327	Copy Server : Print Job Set Distribution				
	1	1 to 1	*	Displays the total number of prints by multiple copy quantity, using the copy server.	
	2	1 to 2 ~ 5	*		
	3	1 to 6 ~ 10	*		
	4	1 to 11 ~ 20	*		
	5	1 to 21 ~ 50	*		
	6	1 to 51 ~ 100	*		
	7	1 to 100 ~ 300	*		
	8	1 to 301 ~	*		

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
7-328	Copy Server : Copy Number of Each Job				
	1	Duplex Copy	*	Displays the total number of duplex prints of one-sided originals from the copy server.	
	2	Duplex Original	*	Display the total number of prints of two-sided originals from the copy server.	
7-330	Tandem Job				
			*	**Japanese version only**	
7-331	Tandem : Copy				
	1	Copy Number of Master	*	**Japanese version only**	
	2	Copy Number of Slave	*	**Japanese version only**	
7-332	Tandem : Copy Number of Each Master Mode				
	1	Original Mode : Text	*	**Japanese version only**	
	2	Original Mode : Text/Photo	*		
	3	Original Mode : Photo	*		
	4	Original Mode : Generation	*		
	5	Original Mode : Pale	*		
	6	Punch	*		
	7	Repeat	*		
	8	Sort	*		
	9	Staple	*		
	10	Series	*		
	11	Erase	*		
	12	Duplex Copy	*		
	13	ADF Mode	*		
	14	Double Copy	*		
	15	Duplex Original	*		
	16	Interrupt	*		
	17	Combine 1 Side	*		
	18	Combine 2 Side	*		
	19	Booklet	*		
	20	Magazine	*		
	21	Batch Mode	*		
	22	Mixed Sizes	*		
	23	Thin	*		
7-333	Tandem : Copy Number of Each Slave Mode				
	1	Original Mode : Text	*	**Japanese version only**	
	2	Original Mode : Text/Photo	*		
	3	Original Mode : Photo	*		

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
7-333	Tandem : Copy Number of Each Slave Mode				
	4	Original Mode : Generation	*	**Japanese version only**	
	5	Original Mode : Pale	*		
	6	Punch	*		
	7	Repeat	*		
	8	Sort	*		
	9	Staple	*		
	10	Series	*		
	11	Erase	*		
	12	Duplex Copy	*		
	13	ADF Mode	*		
	14	Double Copy	*		
	15	Duplex Original	*		
	16	Interrupt	*		
	17	Combine 1 Side	*		
	18	Combine 2 Side	*		
	19	Booklet	*		
	20	Magazine	*		
	21	Batch Mode	*		
	22	Mixed Sizes	*		
	23	Thin	*		
7-401	Total SC Counter				
			*	Displays the total number of service calls that have occurred.	
7-403	SC History				
	1	Latest	*	Displays the latest 10 service call codes.	
	2	Latest 1st	*		
	3	Latest 2nd	*		
	4	Latest 3rd	*		
	5	Latest 4th	*		
	6	Latest 5th	*		
	7	Latest 6th	*		
	8	Latest 7th	*		
	9	Latest 8th	*		
	10	Latest 9th	*		
7-501	Total Jam Counter				
			*	Displays the total number of copy jams and original jams.	
7-502	Total Copy Jam Counter				
			*	Displays the total number of copy jams.	
7-503	Total Original Jam Counter				
			*	Displays the total number of original jams.	

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
7-504	Copy Jam Counter by Jam Location				
	1	At Power On	*	Displays the total number of copy jams by location. These are jams when the paper does not activate the sensor.	
	3	1st Paper Tray	*	(1st Paper Feed Sensor)	
	4	2nd Paper Tray	*	(2nd Paper Feed Sensor)	
	5	3rd Paper Tray	*	(3rd Paper Feed Sensor)	
	6	4th Paper Tray	*	(Not Used)	
	7	LCT Relay Sensor	*		
	8	Relay Sensor 1	*	(Not Used)	
	9	Relay Sensor 2	*	(Not Used)	
	10	Relay Sensor 3	*	(Not Used)	
	11	Relay Sensor 4	*	(Not Used)	
	12	Relay Sensor	*		
	13	Registration Sensor	*		
	15	Fusing Exit Sensor	*		
	16	Exit Sensor	*		
	19	Duplex Entrance Sensor	*		
	20	Duplex Relay Sensor 1	*	(Duplex Transport Sensor 1)	
	21	Duplex Relay Sensor 2	*	(Duplex Transport Sensor 2)	
	22	Duplex Relay Sensor 3	*	(Duplex Transport Sensor 3)	
	23	Duplex Exit Sensor	*	(Not Used)	
	25	Entrance Sensor – Fin.	*		
	26	Upper Tray Exit Sensor – Fin.	*		
	27	Shift Tray Exit Sensor – Fin.	*		
	28	Stapler Tray Entrance Sensor – Fin.	*		
	29	Stapler Tray Paper Sensor – Fin.	*		

Mode No. (Class 1 , 2 & 3)				Function	Settings
7-504	Copy Jam Counter by Jam Location				
	30	Entrance Sensor - PP	*	Displays the total number of copy jams by location.	
	31	Proof Tray Exit Sensor - PP	*	These are jams when the paper does not activate the sensor.	
	32	Relay Sensor – PP	*		
	33	Exit Sensor - PP	*		
	34	By-pass Tray	*		
	51	At Power On	*	These are jams when the paper stays at the sensor.	
	53	1st Paper Tray	*	(1st Paper Feed Sensor)	
	54	2nd Paper Tray	*	(2nd Paper Feed Sensor)	
	55	3rd Paper Tray	*	(3rd Paper Feed Sensor)	
	56	4th Paper Tray	*	(Not Used)	
	57	LCT Relay Sensor	*		
	58	Relay Sensor 1	*	(Not Used)	
	59	Relay Sensor 2	*	(Not Used)	
	60	Relay Sensor 3	*	(Not Used)	
	61	Relay Sensor 4	*	(Not Used)	
	62	Relay Sensor	*		
	63	Registration Sensor	*		
	65	Fusing Exit Sensor	*		
	66	Exit Sensor	*		
	69	Duplex Entrance Sensor	*		
	70	Duplex Relay Sensor 1	*	(Duplex Transport Sensor 1)	
	71	Duplex Relay Sensor 2	*	(Duplex Transport Sensor 2)	
	72	Duplex Relay Sensor 3	*	(Duplex Transport Sensor 3)	
	73	Duplex Exit Sensor	*	(Not Used)	

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
7-505	Original Jam Counter by Jam Location				
	1	At Power On	*	Displays the total number of original jams by location.	
	3	ADF Feed-in Sensor	*	(Entrance and Registration Sensor)	
	4	ADF Feed-out Sensor	*	(Exit and Inverter Sensor)	
7-506	Jam Counter by Copy Size				
	4	A4 Sideways	*	Displays the total number of copy jams by paper size.	
	6	A5 Sideways	*		
	14	B5 Sideways	*		
	38	LT Sideways	*		
	44	HLT Sideways	*		
	128	Other Size	*		
	132	A3	*		
	133	A4 Lengthwise	*		
	134	A5 Lengthwise	*		
	141	B4 Lengthwise	*		
	142	B5 Lengthwise	*		
	160	DLT	*		
	164	LG	*		
	166	LT Lengthwise	*		
	172	HLT Lengthwise	*		
7-507	Jam History				
	1	Copy : Latest	*	Displays the following items for the most recent 10 jams. 1. Last 5 digits of the total counter value 2. Paper size 3. Detected position 4. Stuck or not fed	
	2	Latest 1 st	*		
	3	Latest 2 nd	*		
	4	Latest 3 rd	*		
	5	Latest 4 th	*		
	6	Latest 5 tht	*		
	7	Latest 6 th	*		
	8	Latest 7 th	*		
	9	Latest 8 th	*		
	10	Latest 9 th	*		
	11	Original : Latest	*		
	12	Latest 1 st	*		
	13	Latest 2 nd	*		
	14	Latest 3 rd	*		
	15	Latest 4 th	*		
	16	Latest 5 tht	*		
	17	Latest 6 th	*		
	18	Latest 7 th	*		
	19	Latest 8 th	*		
	20	Latest 9 th	*		

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
7-801	ROM Version Display				
	1	Main		Displays the ROM versions. MAIN: LCDC: SIB: HDC: CSS (P1) BAN:	
	2	Options		Displays the ROM versions. ADF: FIN: Print Post (Mailbox): Printer:	
7-803	PM Counter Display				
			*	Displays the PM counter since the last PM.	
7-804	PM Counter Reset				
				Resets the PM counter.	Start
7-807	SC/Jam Counter Reset				
				Resets the SC and jam counters. Press “Start” to reset.	Start
7-808	Counters Reset				
				Resets the following counters: Press “Start” to reset. • All counters of SP7-003 • All counters of SP7-006 • All counters which are listed on the counter list (UP1-19-2)	Start
7-810	Access Code Clear				
				Resets both the key operator code and the weekly timer code (Key operator code for off setting). Press “Start” to reset.	Start
7-816	Copy Counter Reset – Paper Tray				
	1	Paper Tray 1		Resets the total copy counter by paper tray. Use these SP modes when replacing the pick-up, feed, and separation rollers in the paper feed stations. (Tray 4 is not used)	Start
	2	Paper Tray 2			
	3	Paper Tray 3			
	4	Paper Tray 4			
	5	LCT			
	6	By-pass Tray			
7-822	Copy Counter Reset - Magnification				
				Resets all counters of SP7-301.	Start
7-823	Copy Counter Reset – Image Edit Modes				
				Resets all counters of SP7-303.	Start
7-825	Total Counter Reset				
				Resets the electrical total counter. *Usually, this SP mode is done at installation.* *This SP mode works only once when the counter value is negative*	Start

Mode No. (Class 1 , 2 & 3)				**Function**	**Settings**
7-902	SC Details				
	1	Latest		Displays details about latest SCs. Not all SCs have these details.	
	2	Latest 1st			
	3	Latest 2nd			
7-904	Copy Counter Reset – Copy Mode				
				Resets all counters of SP7-304.	Start
7-905	Copy Counter Reset – Multiple Copy Mode				
				Resets all counters of SP7-305.	Start
7-906	Clear Original Number of Each size				
				Resets all counters of SP7-202.	Start
7-907	Clear Job Number of Each size				
				Resets all counters of SP7-306.	Start
7-908	Copy : Clear Original Number				
				Resets all counters of SP7-002-2.	Start
7-920	Copy Server : Clear Scanned Storage				
				Resets the counter of SP7-320.	Start
7-921	Copy Server : Clear Original Number of Each Size				
				Resets all counters of SP7-321.	Start
7-923	Copy Server : Clear Print Number of Each Copy				
				Resets all counters of SP7-323	Start
7-924	Copy Server : Clear Print Job Logging				
				Resets all counters of SP7-324	Start
7-925	Copy Server : Clear Print Job Page Distribution				
				Resets all counters of SP7-325	Start
7-926	Copy Server : Clear Print Job File Distribution				
				Resets all counters of SP7-326	Start
7-927	Copy Server : Clear Print Job Set Distribution				
				Resets all counters of SP7-327.	Start

4.2.3 TEST PATTERN PRINTING (SP2-902)

NOTE: Do not operate the machine until the test pattern is printed out completely. Otherwise, an SC may occur.

1. Access the SP mode which contains the test pattern you need.
2. Touch the “Copy Mode” key on the operation panel to access the copy mode display.
3. Select the paper size.
4. Press the “Start” key to print the test pattern.
5. After checking the test pattern, exit copy mode by touching the “SP Mode” key.
6. Exit the SP mode.

Test Pattern Table (SP2-902-2: Test Pattern Printing – IPU)

No.	Test Pattern	No.	Test Pattern
0	None	7	Vertical Lines (1-dot)
1	Grayscale 1	8	Vertical Lines (2-dot)
2	Grayscale 2	9	Hatch Pattern
3	Grayscale 3	10	Cross Pattern
4	Grayscale 4	11	Slant Pattern
5	Grayscale 5	12	Cross Stitch (400 dpi)
6	Vertical Lines (256-greyscale)	13	Cross Stitch (600 dpi)

Test Pattern Table (SP2-902-3: Test Pattern Printing – Printing)

No.	Test Pattern	No.	Teat Pattern
0	None	11	Argyle Pattern
1	Vertical Line (1-dot)	12	16 Grayscales (Horizontal)
2	Horizontal Line (1-dot)	13	16 Grayscales (Vertical)
3	Vertical Line (2 dot)	14	16 Grayscales (Vert./Hor.)
4	Horizontal Line (2-dot)	15	16 Grayscales (Vert./Hor Overlay)
5	Grid Pattern (Single-dot)	16	Not used
6	Grid Pattern (Double-dot)	17	Horizontal Line (1-dot)
7	Alternating Dot Pattern	18	Grid Pattern (Single-dot)
8	Full Dot Pattern	19	Grid Pattern (Double-dot)
9	Black Band	20	Alternating Dot Pattern
10	Trimming Area	21	Blank Page

4.2.4 INPUT CHECK

Main Machine Input Check (SP5-803)

1. Access SP mode.
2. Select the class 3 SP number which will access the switch or sensor you wish to check.
3. Check the status of the sensor or switch.
   NOTE: If you wish to change to another class 3 level, press the "Next" or "Prev." key.
4. The reading ("0" or "1") will be displayed. The meaning of the display is as follows.

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	0	0	0	0	0	0	0

Class 3 no.	Bit no.	Description	Reading	
			0	**1**
1 (Paper Feed 1)	7	Paper Size 1 Switch	On	Off
	6	Paper Size 2 Switch	On	Off
	5	Paper Size 3 Switch	On	Off
	4	Paper Size 4 Switch	On	Off
	3	Paper Size 5 Switch	On	Off
	2	2nd Near End Sensor	Not detected	Near end
	1	Not Used		
	0	1st Near End Sensor	Not detected	Near end
2 (Paper Feed 2)	7	Not used		
	6	Not used		
	5	Tray Construction 1	4 : 0 , 5 : 1 Export	
	4	Tray Construction 2	4 : 1 , 5 : 1 Japan	
	3	Not Used		
	2	Not Used		
	1	3rd Tray Set Detection	Set	Not Set
	0	3rd Near End Sensor	Not Detected	Near end
3 (Paper Feed 3)	7	Left Tandem Tray Set Detection 2 (Connector)	Set	Not set
	6	Side Fence Positioning Sensor	Not Detected	Fence Detected
	5	Base Plate Down Sensor	Not Detected	Detected
	4	Rear Fence HP Sensor	Not Detected	At home Position
	3	Side Fence Close Sensor	Open	Closed
	2	Rear Fence Return Sensor	Not detected	Return position

Class 3 no.	Bit no.	Description	Reading	
			0	1
3 (Paper Feed 3)	1	Left Tandem Paper End Sensor	Not paper end	Paper end
	0	Right Tandem Tray Set Detection 2 (Connector)	Set	Not set
4 (Paper Feed 4)	7	1st Paper Feed Sensor	Paper detected	No paper
	6	2nd Paper Feed Sensor	Paper detected	No paper
	5	3rd Paper Feed Sensor	Paper detected	No paper
	4	Not used		
	3	Not used		
	2	Not used		
	1	Not used		
	0	Not used		
5 (Paper Feed 5)	7	1st Lift Sensor	Lifted	No paper
	6	2nd Lift Sensor	Lifted	No paper
	5	3rd Lift Sensor	Lifted	No paper
	4	Not used		
	3	1st Paper End Sensor	Not paper end	Paper end
	2	2nd Paper End Sensor	Not paper end	Paper end
	1	3rd Paper End Sensor	Not paper end	Paper end
	0	Not used		
6 (3rd Paper Feed Tray)	7	Not used		
	6	Not used		
	5	Not used		
	4	Not used		
	3	3rd Tray Down Switch	On	Off
	2	3rd Tray Down Sensor	Not detected	Overload
	1	3rd Tray Motor Lock	Normal	Overload
	0	3rd Tray Paper Set	No Paper	Detected
7 (Toner Collection)	7	Not used		
	6	Not used		
	5	Not used		
	4	Not used		
	3	Paper Feed Motor Lock	Overload	Normal
	2	Toner Overflow Switch	Full	Not full
	1	Toner Collection Bottle Set Switch	Set	Not set
	0	Toner Collection Motor Sensor	Pulse	Pulse

Class 3 no.	Bit no.	Description	Reading	
			0	1
8 (I/O Board Dip Switch 101)	7	Dip Switch – 8	On	Off
	6	Dip Switch – 7	On	Off
	5	Dip Switch – 6	On	Off
	4	Dip Switch – 5	On	Off
	3	Dip Switch – 4	On	Off
	2	Dip Switch – 3	On	Off
	1	Dip Switch – 2	On	Off
	0	Dip Switch – 1	On	Off
9 (Motor Lock /Transport)	7	Drum Motor Lock	Overload	Normal
	6	By-pass Feed Motor Lock	Overload	Normal
	5	Development Motor Lock	Overload	Normal
	4	Fusing Motor Lock	Overload	Normal
	3	Not Used		
	2	Fusing Exit Sensor	Paper detected	No paper
	1	Exit Sensor	Paper detected	No paper
	0	Tray Paper Limit Sensor	Not full	Full
10 (Duplex)	7	Duplex Entrance Sensor	Detected	Not detected
	6	Duplex Transport 3 Sensor	Detected	Not detected
	5	Duplex Transport 2 Sensor	Detected	Not detected
	4	Duplex Transport 1 Sensor	Detected	Not detected
	3	Duplex Jogger HP Sensor	Not detected	Detected
	2	Duplex Connection	Connected	Not Connected
	1	Toner Pump Connection	Connected	Not Connected
	0	Guide Plate Position Sensor	In position	Out of position
11 (LCT1)	7	LCT Motor Lock	Overload	Normal
	6	LCT Tray Down Switch	On	Off
	5	LCT Connection	Connected	Not connected
	4	LCT Cover Open Switch	Closed	Open
	3	LCT Paper End Sensor	Paper end	Not paper end
	2	LCT Down Sensor	Not detected	Detect
	1	LCT Lift Sensor	Layout	Not lifted
	0	LCT Paper Height 1 Sensor	Not detected	Detected
12 (LCT2)	7	Fusing Zero Cross	Detected	Not detected
	6	Not Used		
	5	Front Door Safety Switch	Closed	Open
	4	Not Used		

Class 3 no.	Bit no.	Description	Reading	
			0	1
12 (LCT2)	3	LCT Paper Height 2 Sensor	Not detected	Detected
	2	LCT Paper Height 3 Sensor	Not detected	Detected
	1	LCT Near End Sensor	Not detected	Near end
	0	LCT Paper Feed Sensor	Paper detected	Paper end
13 (By-pass)	7	LCT Paper Position Sensor	Detected	Not detected
	6	Toner End Sensor	Toner End	Not toner end
	5	By-pass Tray Switch	Closed	Open
	4	Relay Sensor	Paper detected	No paper
	3	By-pass Paper End Sensor	Not paper end	Paper end
	2	Registration Sensor	Paper detected	No paper
	1	Not Used		
	0	Not Used		
14 (Unit Set)	7	Not used		
	6	Not used		
	5	Key Counter Set	Set	Not set
	4	Total Counter Set	Set	Not set
	3	Polygon Motor Cooling Fan Lock	No lock	Lock
	2	Toner Recycling Sensor	Pulse	Pulse
	1	Drum Unit Set	Set	Not set
	0	Fusing Unit Set	Set	Not set

Table 1: 2nd Tray Paper Size Switch Combination

Class 3 no.	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Paper Width	
						A/B size version	Inch version
1	0	1	1	1	1	A3	DLT
	0	0	1	1	1	81/4 “ x 13”	81/2 “ x 14”
	1	0	0	1	1	A4 lengthwise	LT lengthwise
	0	1	0	0	1	A4 sideways	LT sideways
	0	0	1	0	0	81/2 ” x 13”	HLT sideways
	0	0	0	1	0	-	8” x 101/2”
	0	0	0	0	1	A5 sideways	8 “x 10”
	1	0	0	0	0	8K lengthwise (Taiwan Version only)	8” x 13”
	1	1	0	0	0	16K lengthwise (Taiwan Version only)	10” x 14”
	1	1	1	0	0	16K sideways (Taiwan Version only)	11” x 15”
	1	1	1	1	0	*	*

ADF Input Check (SP6-007)

Class 3 no.	Bit no.	Description	Reading	
			0	1
1	7	Original Set Sensor	No Original	Original detected
	6	Original Width Sensor 1	No Original	Original detected
	5	Original Width Sensor 2	No Original	Original detected
	4	Original Width Sensor 3	No Original	Original detected
	3	Entrance Sensor	No Original	Original detected
	2	Registration Sensor	No original	Original detected
	1	Exit Sensor	No original	Original detected
	0	Inverter Sensor	No original	Original detected
2	7	DF Position Sensor	Down	Up
	6	APS Start Sensor	Start	Off
	5	Feed Cover Sensor	Close	Open
	4	Exit Cover Sensor	Close	Open
	3	Bottom Plate HP Sensor	At home position	Not home position
	2	Bottom Plate Position Sensor	Detected	Not detected
	1	Pick-up Roller HP Sensor	At home position	Not home position
	0	Not used		

4.2.5 OUTPUT CHECK

NOTE: Motors keep turning in this mode regardless of upper or lower limit sensor signals. To prevent mechanical or electrical damage, do not keep an electrical component on for a long time.

Main Machine Output Check (SP5-804)

1. Access SP mode 5-804.
2. Select the SP number that corresponds to the component you wish to check.
3. Press “1”, then press # to check that component.
4. Press “0” to interrupt the test.
5. If you wish to check another component, press the “Next” or “Prev.” Key.

No.	Description	No.	Description
1	1st Paper Feed Clutch	38	Relay Clutch (LCT)
2	2nd Paper Feed Clutch	39	Registration Motor
3	3rd Paper Feed Clutch	40	Guide Plate Solenoid
4	Not Used	41	Inverter Gate Solenoid
5	By-pass Feed Clutch	42	Not used
6	Paper Feed Clutch (LCT)	43	Duplex Transport Clutch
7, 8	Not used	44	Duplex Feed Clutch
9	1st Pick-up Solenoid	45	Duplex Inverter Gate Solenoid
10	2nd Pick-up Solenoid	46	Reverse Roller Solenoid
11	3rd Pick-up Solenoid	47~ 52	Not used
12	Not Used	53	Development Motor
13	By-pass Pick-up Solenoid	54	Toner Recycling Motor
14	Pick-up Solenoid (LCT)	55	Not used
15, 16	Not used	56	Toner Supply Motor
17	1st Separation Roller Solenoid	57	Transfer Belt Solenoid
18	2nd Separation Roller Solenoid	58 ~ 62	Not used
19	3rd Separation Roller Solenoid	63	Charge Corona
20 ~ 23	Not used	64	Grid Plate
24	Rear Fence Motor	65, 66	Not used
25	LCT Motor (LCT)	67	Development Bias
26	Paper Feed Motor	68	Not used
27	By-pass Feed Motor	69	Transfer Belt Bias
28	Drum Motor	70	ID Sensor
29 ~ 30	Not used	71 ~ 73	Not used
31	Fusing/Duplex Motor	74	Optics Cooling Fan
32	1st Vertical Relay Clutch	75	Duplex Cooling Fan
33	2nd Vertical Relay Clutch	76	Exhaust Fan (Low speed)
34	3rd Vertical Relay Clutch	77	Exhaust Fan (High speed)
35	Not used	78	Fusing Fan
36	Relay Clutch	79	Not used
37	Not used	80	Tray Junction Gate Solenoid (Finisher)

No.	Description	No.	Description
81	Stapler Junction Gate Solenoid (Finisher)	90	Laser Diode
82	Positioning Roller Solenoid (Finisher)	91	Not used
83	Not used	92	Tray Lift Motor (Finisher)
84	Mechanical Counter	93	Jogger Motor (Finisher)
85	Upper Transport Motor (Finisher)	94	Stapler Motor (Finisher)
86	Lower Transport Motor (Finisher)	95	Stack Feed-out Belt Motor (Finisher)
87	Shift Tray Exit Motor (Finisher)	96	Shift Motor (Finisher)
88	Staple Hammer Motor (Finisher)	97	Stapler Rotation Motor (Finisher)
89	Punch Motor (Punch Unit)	98 ~ 99	Not used

ADF Output Check (SP6-008)

No.	Description
1	Feed-in Motor (Forward)
2	Feed-in Motor (Reverse)
3	Transport Motor (Forward)
4	Transport Motor (Reverse)
5	Feed-out Motor
6	Exit Gate Solenoid
7	Inverter Gate Solenoid
8	DF Indicators
9	Pick-up Motor (Forward)
10	Bottom Plate Motor

4.2.6 SYSTEM PARAMETER AND DATA LISTS (SMC LISTS)

1. Access the SP mode corresponding to the list that you wish to print.
    1) SP5-990-1 : All system parameter list
    2) SP5-990-2 : SP mode data list
    3) SP5-990-3 : UP mode data list
    4) SP5-990-4 : Machine status history data list
    5) SP5-990-5 : Copy mode list (UP mode No.10)
    6) SP5-990-6 : SP mode data list with a large font size
2. Touch the “Copy Mode” key to access the copy mode display.
3. Select the paper size and press the “Start” key to print the list.
4. After printing the list, exit the copy mode display by touching the “SP Mode” key.
5. Exit SP mode.

4.2.7 MEMORY ALL CLEAR (SP5-801)

NOTE: Memory All Clear mode resets all the settings stored in the NVRAM to their default settings except the following:

- Electrical total counter value (SP7-003-1)
- Machine serial number (SP5-811)
- Plug & Play Brand Name and Production Name Setting (SP5-907)

Among the settings that are reset are the correction data for process control and all the software counters.

Normally, this SP mode should not be used. This procedure is required only after replacing the NVRAM or when the copier malfunctions due to a damaged NVRAM.

1. Print out all SMC Data Lists (SP mode 5-990-1).
2. Access SP mode 5-801.
3. Hold down the "Start" key for over 3 seconds. At this time the beeper will sound.
4. Turn the main power switch off and back on.
5. Calibrate the LCD touch panel.
6. Do the laser beam pitch adjustment.
7. Do the printer and scanner registration and magnification adjustments (see Replacement and Adjustment – Copy Image Adjustments).
8. Referring to the SMC data lists, re-enter any values which had been changed from their factory settings.
9. Do SP 3-001-2 (ID Sensor Initial Setting) and SP4-911-1 (HDD media test).
10. Check the copy quality and the paper path, and do any necessary adjustments.

4.2.8 SOFTWARE RESET

The software can be reset when the machine hangs up. Use the following procedure.

Either

Turn the main power switch off and on.

Or

Hold down the “#” key and “**.**” key at the same time for over 10 seconds.

4.2.9 SYSTEM SETTING AND COPY SETTING (UP MODE) RESET

System Setting Reset

The system settings in the UP mode can be reset to their defaults using the following procedure.

1. Make sure that the machine is in the copier standby mode.
2. Press the User Tools key.
3. Hold down the “#” key and touch the “System Setting” key.
4. A confirmation message will be displayed, then press “Yes”.

Copy Features Reset

The copy settings in the UP mode can be reset to their defaults using the following procedure.

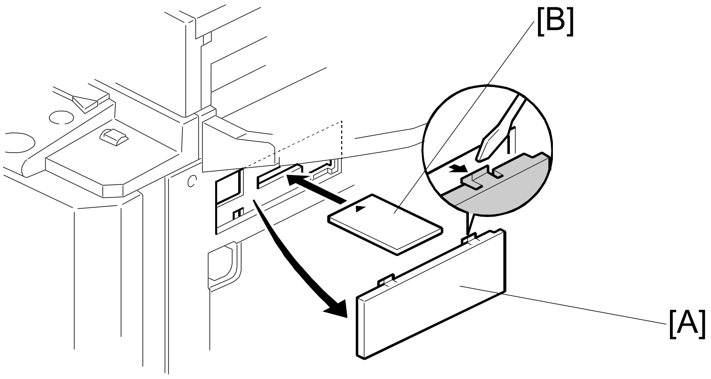
1. Make sure that the machine is in the copier standby mode.
2. Press the User Tools key.
3. Hold down the “#” key and touch “Copy Features” key.
4. A confirmation message will be displayed, then press “Yes”.

4.3 PROGRAM DOWNLOAD

In this machine, the SBICU software is upgraded using a flash memory card.

There are two program download procedures. One downloads from the flash memory card to the SBICU. The other downloads from the SBICU to a flash memory card.

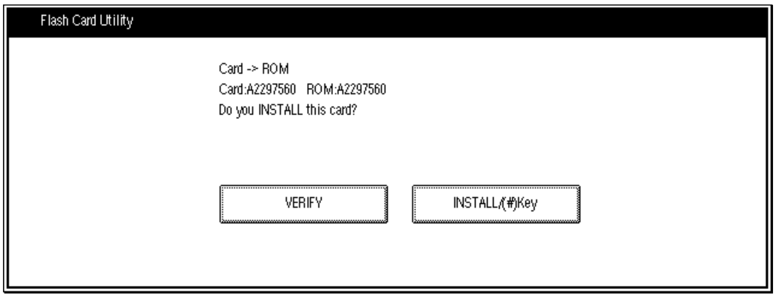
NOTE: The procedure for how to write the source software from a flash memory card writer to a flash memory card is described in the SwapBox FTL manual.



A229R120.WMF

Downloading to the SBICU

1. Turn off the main power switch.
2. Remove the flash memory card cover [A].
3. Plug the flash memory card [B] into the card slot.
   NOTE: Make sure that the surface printed “A” faces upwards.
4. Turn on the main power switch.

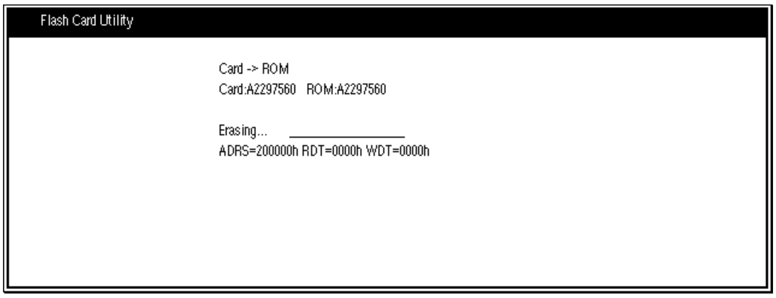


```
Card -> ROM
Card:A2297560   ROM:A2297560
Do you INSTALL this card?
```

A229M507.TIF

5. Touch “Install”. The machine erases the current software, then writes the new software to the SBICU. This takes about 200 seconds.

Display during erasing

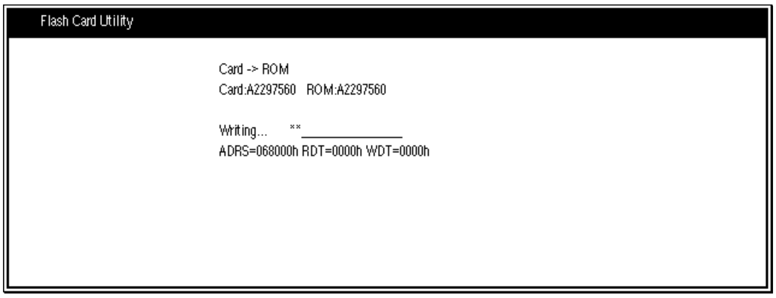


```
Card -> ROM
Card:A2297560   ROM:A2297560

Erasing...     ________________
ADRS=200000h RDT=0000h WDT=0000h
```

A229M508.TIF

Display during writing

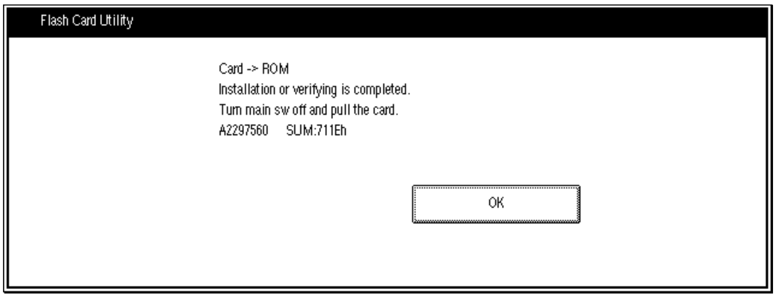


```
Card -> ROM
Card:A2297560   ROM:A2297560

Writing...     **______________
ADRS=068000h RDT=0000h WDT=0000h
```

A229M509.TIF

Display when the download is complete

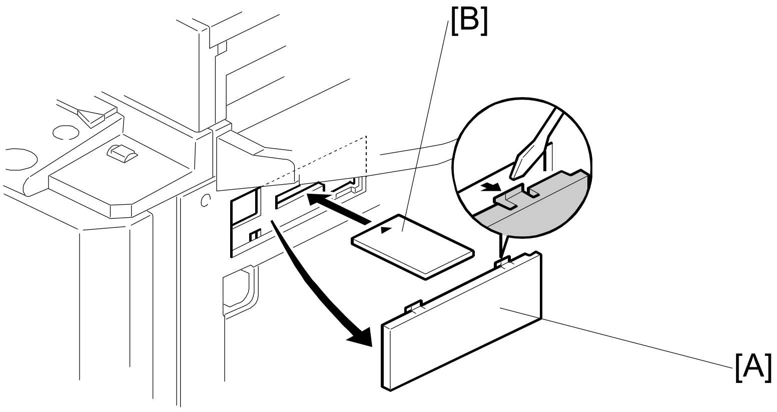


```
Card -> ROM
Installation or verifying is completed.
Turn main sw off and pull the card.
A2297560    SUM:711Eh
```

A229M510.TIF

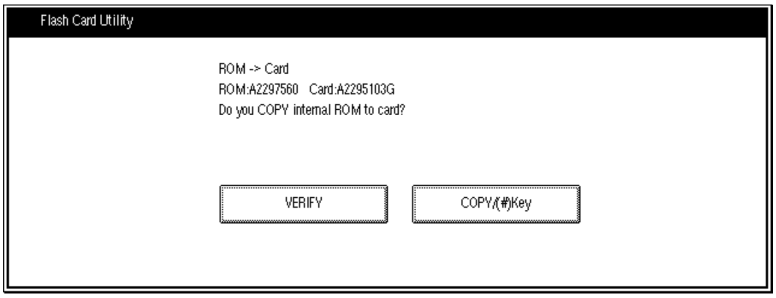
If downloading failed, an error message appears on the display. At this time, touch the “OK” key to re-try the download.

Download from SBICU to Flash Memory Card



A229R120.WMF

1. Turn off the main power switch.
2. Remove the flash memory card cover [A].
3. Plug the flash memory card [B] into the card slot.
   NOTE: Make sure that the surface printed “A” faces upwards.
4. Turn on the main power switch while holding down the operation switch.



```
ROM -> Card
ROM:A2297560   Card:A2295103G
Do you COPY internal ROM to card?
```

A229M504.TIF

5. Touch the “COPY” key. The machine erases the current software, then writes the new software to the flash memory card. This takes about 200 seconds. The display changes in the same way as for “Download from flash memory card to SBICU”.

4.4 USER PROGRAM MODE

The user program (UP) mode is accessed by users, and by sales and service staff. UP mode is used to input the copier's default settings.

4.4.3 HOW TO ENTER AND EXIT UP MODE

Press the User Tools button, then select the UP mode program. After finishing the UP mode program, touch "Exit" key to exit UP mode.

4.4.4 UP MODE TABLE

NOTE: The function of each UP mode is explained in the System Setting and Copy Reference sections of the operating instructions.

System Setting Table

Basic 1	Operation Panel Beeper
	Ready Operation Panel Beeper
	Copy Count Display
	Auto Response (Human) Sensor
	Auto Tray Switching
	Auto Off Timer
	Low Power Shift Time
	Low Power Timer
	ADF Original Ejection
	<F/F4> Size Setting
Basic 2	System Reset
	Copy Output Tray
Set Time	Set Date
	Set Time
	Weekly Timer : Monday
	Weekly Timer : Tuesday
	Weekly Timer : Wednesday
	Weekly Timer : Thursday
	Weekly Timer : Friday
	Weekly Timer : Saturday
	Weekly Timer : Sunday
	Key Operator Code for Off Setting
Paper Size Setting	Tray 1 Paper Size Setting
	Tray 2 Paper Size Setting
	Tray 3 Paper Size Setting
	By-pass Tray : Special Paper Indication
	Tray 1 : Special Paper Indication
	Tray 2 : Special Paper Indication
	Tray 3 : Special Paper Indication
Count Manager	LCT : Special Paper Indication
	Set User Code
	Key Counter
	AOF (Keep it on)

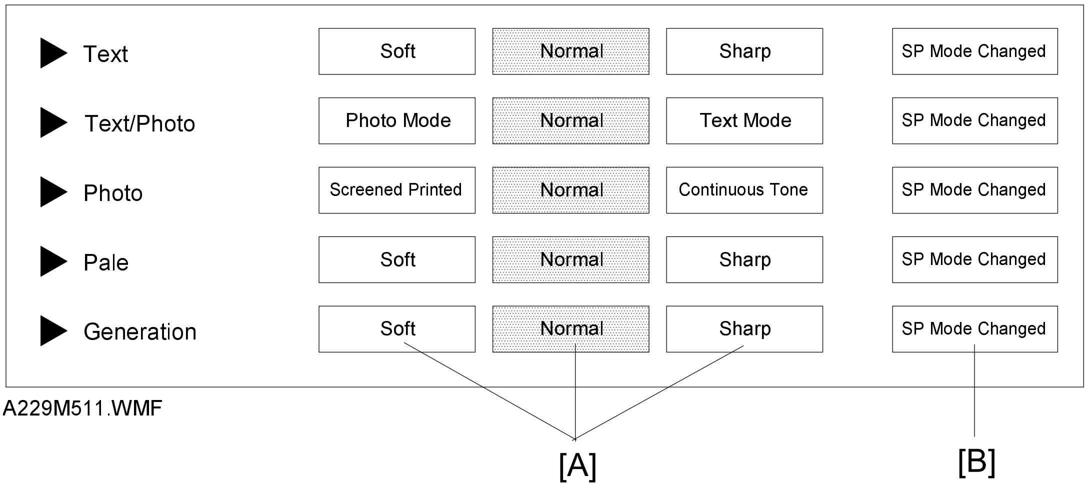
Copy Features Table

Tab	Item	Detail
General Features 1/3	Auto Paper Select Priority	
	Auto Paper Select Tray Display	
	Auto Image Density Priority	
	Original Mode Priority	
	Original Mode Display	
	Original Mode Quality Level	Text
		Text/Photo
		Photo
		Pale
		Generation
	Original Image Density Level	Text
		Text/Photo
		Photo
		Pale
		Generation
	Auto Reset Timer	
	Paper Tray Priority	
General Features 2/3	Shortcut R/E	
	R/E Priority	
	Duplex Mode Priority	
	Copy Orientation in Duplex Mode	
	Original Orientation in Duplex Mode	
	Book Duplex	
	Initial Mode	
	Maximum Copy Quantity	
	Original Beeper	
General Features 3/3	Shortcut : F1	
	Shortcut : F2	
	Shortcut : F3	
	Shortcut : F4	
	Shrink & Center Ratio	
Reproduction Ratio 1/2	Enlarge 1	
	Enlarge 2	
	Enlarge 3	
	Enlarge 4	
	Enlarge 5	
	Priority Setting : Enlarge	
Reproduction Ratio 1/2	Reduce 1	
	Reduce 2	
	Reduce 3	
	Reduce 4	
	Reduce 5	
	Reduce 6	
	Priority Setting : Reduce	

Tab	Item	Detail
Page Format 1/2	Cover Mode	
	Copy Back Cover	
	Front Margin : Left/Right	
	Back Margin : Left Right	
	Front Margin : Top/Bottom	
	Back Margin : Top/Bottom	
	1→2 Duplex Auto Margin Adjust	
	Ease Border	
	Combine Original Shadow Erase	
Page Format 2/2	Erase Center	
	Repeat Separation Line	
	Double Copies Separation Line	
	Combine Separation Line	
	Booklet/Magazine Original Orientation	
Input Output	Individual Input/Output Operation	
	Next Job Scan Start	
	Batch (SADF) Auto Reset Time	
	ADRF Original Table Rise Time	
	Platen Mode Exit	
	Duplex : Auto Eject	
	Combine : Auto Eject	
	Rotate Sort Auto Paper Continue	
	Auto Sort Mode	
	Memory Full Auto Scan Restart	
Count Manager	Check/Rest/Print Copy Counter	Print
		Reset Counter
		Reset All
	User Code Register/Change/Delete	Register
		Change
		Delete User Code
		Delete All User Code

4.4.5 IMAGE QUALITY SETTING BY UP MODE

The ‘Original Mode Quality Level in Copy Features’ UP mode is related to the ‘MTF Filter Settings’ SP mode.


Text
Soft
Normal
Sharp
SP Mode Changed
Text/Photo
Photo Mode
Normal
Text Mode
SP Mode Changed
Photo
Screened Printed
Normal
Continuous Tone
SP Mode Changed
Pale
Soft
Normal
Sharp
SP Mode Changed
Generation
Soft
Normal
Sharp
SP Mode Changed
[A]
[B]

A229M511.WMF

If a setting from the above three columns [A] is selected, the MTF coefficient (SP4-903-011 to 019, 041 to 047) and MTF strength (SP4-903-20 to 23, 050 to `053) are fixed. Any changes to the SP mode settings are not reflected in the copy. To use the settings specified by SP mode, the user must select “SP mode Changed” [B].

The detailed relationship between the different original modes, the UP modes, and the SP modes are as follows.

Text mode

Magnification Ratio: 32– 64%

MTF Filter Strength	Strong						Weak
UP mode		Sharp			Normal		Soft
Coefficient Level – Main Scan SP4-903-011	6	4	6	5	1	2	1
Coefficient Level – Sub Scan SP4-903-041	8	6	8	7	3	4	2
Strength Level – Main Scan SP4-903-020	4	3	2	2	2	1	0
Strength Level – Sub Scan SP4-903-050	4	3	2	2	2	1	0

Magnification Ratio: 65 – 154%

MTF Filter Strength	Strong						Weak
UP mode			Sharp		Normal		Soft
Coefficient Level – Main Scan SP4-903-012	6	1	6	5	2	1	1
Coefficient Level – Sub Scan SP4-903-042	8	2	8	7	4	2	2
Strength Level – Main Scan SP4-903-021	4	4	2	2	2	2	0
Strength Level – Sub Scan SP4-903-051	4	4	2	2	2	2	0

Magnification Ratio: 155 – 256%

MTF Filter Strength	Strong						Weak
UP mode			Sharp		Normal		Soft
Coefficient Level – Main Scan SP4-903-013	6	5	6	5	5	1	1
Coefficient Level – Sub Scan SP4-903-043	8	7	8	7	7	2	3
Strength Level – Main Scan SP4-903-022	4	3	2	2	1	2	0
Strength Level – Sub Scan SP4-903-052	4	4	3	2	2	2	1

Magnification Ratio: 257 – 400%

MTF Filter Strength	Strong						Weak
UP mode			Sharp		Normal		Soft
Coefficient Level – Main Scan SP4-903-014	3	6	4	5	6	1	5
Coefficient Level – Sub Scan SP4-903-044	5	8	8	7	8	2	7
Strength Level – Main Scan SP4-903-023	4	3	3	2	1	2	0
Strength Level – Sub Scan SP4-903-053	4	4	4	4	4	4	4

Text/Photo Mode

Text areas and photo areas in text/photo mode use different filters. However, the filter for text areas is used for the entire image (including photo areas) if the magnification ratio is 110% or more. (This threshold magnification ratio of 110% can be changed with SP4-912-018.)

Text areas

Magnification Ratio: 32 – 64% (Text Areas)

MTF Filter Strength	Strong					Weak
UP mode	Letter Mode		Normal			
Coefficient Level SP4-903-017	5	4	3	2	1	0

Magnification Ratio: 65 – 109% (Text Areas)

MTF Filter Strength	Strong					Weak
UP mode	Letter Mode		Normal			
Coefficient Level SP4-903-017	5	4	3	2	1	0

Magnification Ratio: 110 – 154% (All Areas: Text Mode)

MTF Filter Strength	Strong					Weak
UP mode	Letter Mode		Normal			
Coefficient Level SP4-903-017	5	4	3	2	1	0

Magnification Ratio: 155 – 256% (All Areas: Text Mode)

MTF Filter Strength	Strong					Weak
UP mode	Letter Mode		Normal			
Coefficient Level SP4-903-017	5	4	3	2	1	0

Magnification Ratio: 257 – 400% (All Areas: Text Mode)

MTF Filter Strength	Strong					Weak
UP mode	Letter Mode		Normal			
Coefficient Level SP4-903-017	5	4	3	2	1	0

Magnification Ratio: 32 – 109 % (Photo areas, and all areas when the user selects Photo Mode)

Filter Type	Smoothing	Smoothing	Smoothing	none	MTF	MTF	MTF
Filter Strength	Strong	Medium	Weak		Strong	Medium	Weak
UP Mode					•Normal •Text mode •Photo mode (all areas)		
SP4-903-047	6	5	4	3	2	1	0

Photo Mode

The smoothing filter is always used in this mode, whether the user selects ”Continuous Tone”, “Normal”, or “Screen Printed”.

When a stronger setting is selected, the reproduction of graduations is improved. However, the image tends to go out of focus.

Smoothing Filter Strength	Strong							Weak
UP Mode			Screened Printed		Normal	Continuous Tone		
Coefficient Level SP4-903-016	7	6	5	4	3	2	1	0

If the user selects “SP Mode Changed” to use another smoothing filter setting, SP4-904-003 (Filter Type Selection in Photo Mode) should be “1: Smoothing”.

If the user selects “SP Mode Changed” to use an MTF filter setting for photo mode, SP4-904-003 (Filter Type Selection in Photo Mode) should be “0: MTF”.

Pale Mode

Magnification Ratio: 32 – 64%

MTF Filter Strength	Strong					Weak
UP mode		Sharp		Normal	Soft	
Coefficient Level SP4-903-018	5	4	3	2	1	0

Magnification Ratio: 65 – 109%

MTF Filter Strength	Strong					Weak
UP mode		Sharp		Normal	Soft	
Coefficient Level SP4-903-018	5	4	3	2	1	0

Magnification Ratio: 110 – 154%

MTF Filter Strength	Strong					Weak
UP mode		Sharp		Normal	Soft	
Coefficient Level SP4-903-018	5	4	3	2	1	0

Magnification Ratio: 155 – 400%

MTF Filter Strength	Strong					Weak
UP mode		Sharp		Normal	Soft	
Coefficient Level SP4-903-018	5	4	3	2	1	0

Generation Mode

Magnification Ratio: 32 – 64%

MTF Filter Strength	Strong					Weak
UP mode		Sharp	Normal		Soft	
Coefficient Level SP4-903-019	5	4	3	2	1	0

Magnification Ratio: 65 – 109%

MTF Filter Strength	Strong					Weak
UP mode		Sharp	Normal		Soft	
Coefficient Level SP4-903-019	5	4	3	2	1	0

Magnification Ratio: 110 – 154%

MTF Filter Strength	Strong					Weak
UP mode		Sharp	Normal		Soft	
Coefficient Level SP4-903-019	5	4	3	2	1	0

Magnification Ratio: 155 – 400%

MTF Filter Strength	Strong					Weak
UP mode		Sharp	Normal		Soft	
Coefficient Level SP4-903-019	5	4	3	2	1	0

4.5 TEST POINTS/DIP SWITCHES/LEDS

4.5.3 DIP SWITCHES

ADF Main Board

DPS101				**Description**
4	**3**	**2**	**1**	
0	0	0	0	Normal operating mode
0	0	0	1	Free run: one-sided original, thin mode, with originals
0	0	1	0	Free run: one-sided original, with originals
0	0	1	1	Free run: one-sided original, no originals
0	1	0	0	Free run: two-sided original, with original
0	1	0	1	Free run: two-sided original, no original
0	1	1	0	Motor test
Others				Do not select

4.5.4 TEST POINTS

I/O Board

Number	**Monitored Signal**
TP163	+5V
TP165	Ground
TP167	+24V
TP168	$+5V_E$
TP170	-12V
TP171	+12V
TP172	Ground
TP173	$+24V_{INT}$

Paper Feed Board

Number	**Monitored Signal**
TP102	+24V
TP103	Ground
TP104	Ground
TP105	+5V

ADF Main Board

No.	**Label**	**Monitored Signal**
TP100	GND	Ground
TP101	Vcc	+5V
TP102	V_A	+24V
TP103	TXD	TXD to the copier
TP104	RXD	RXD from the copier

4.5.5 FUSES

PSU

Number	Description
FU101	Protects the ac input line.
FU102	Protects +24V
FU103	Protects +24V
FU104	Protects +24V
FU105	Protects +24V
FU106	Protects +24V
FU107	Protects +24V
FU108	Protects +24V
FU109	Protects +12V
FU110	Protects +5V
FU111	Protects +5V
FU112	Protects –12V
FU113	Protects +5V
FU114	Protects +5V
FU115	Protects +5V
FU116	Protects +24V

ADF Main Board

No.	Function
FU101	Protects the 24 V line.

4.5.6 VARIABLE RESISTORS

ADF Main Board

No.	Function
VR101	Adjusts the original registration for the 1st side of the original.
VR102	Adjusts the original stop position against the left scale for the 2nd side of the original.
VR103	Not used

4.5.7 LEDS

BICU

Number	Monitored Signal
LED102	Blinking : Normal Stays on or off : CPU defective
LED103	Turns on when the main power switch on.
LED104	Blinking : Normal Stays on or off : HDD abnormal
LED105	Off : Normal
LED106	Blinking : Normal

Paper Feed Board

Number	Monitored Signal
LED101	Turns on 500ms interval : Normal (software) Turns on 200ms interval : Software error is happen Stays on of off : Paper feed board defective

4.6 SPECIAL TOOLS AND LUBRICANTS

4.6.3 SPECIAL TOOLS

Part Number	Description	Q'ty
A2309352	Flash Memory Card – 4MB	1
A2309351	Case – Flash Memory Card	1
A0069104	Scanner Positioning Pin (4 pcs/set)	1
54209516	Test Chart – OS-A3 (10 pcs/Set)	1
A0299387	Digital Multimeter – FLUKE 87	1

4.6.4 LUBRICANTS

Part Number	Description	Q'ty
A0289300	Grease Barrierta JFE 5 5/2	1
52039502	Silicone Grease G-501	1
G0049668	Grease: KS660: SHIN ETSU	1

5. PREVENTIVE MAINTENANCE SCHEDULE

5.1 PM TABLE

NOTE: The amounts mentioned as the PM interval indicate the number of prints, unless stated otherwise.

Symbol key: C: Clean, R: Replace, L: Lubricate, I: Inspect

	EM	150K	300K	450K	NOTE
SCANNER/OPTICS					
1st Mirror		C	C	C	Optics cloth
2nd Mirror		C	C	C	Optics cloth
3rd Mirror		C	C	C	Optics cloth
Scanner Guide Rails		C	C	C	Dry cloth
Exposure Glass	C	C	C	C	Dry cloth or alcohol
Toner Shield Glass		C	C	C	Optics cloth
APS Sensors		C	C	C	Dry cloth
Optics Dust Filter		I	R	I	
AROUND THE DRUM					
Charge Corona Wire		R	R	R	
Charge Corona Casing		C	C	C	Damp cloth
Charge Corona Wire Cleaner		C	R	C	Blower brush
Drum Potential Sensor		C	C	C	Blower brush
Charge Corona Grid		R	R	R	
ID Sensor		C	C	C	Blower brush; initialize with SP3-001-2 after cleaning.
Quenching Lamp		C	C	C	Dry cloth
Wire Cleaner Coil and Grounding Plate		I	I	I	Electrical connection check
Drum Entrance Seal		C	R	C	Dry cloth
Pick-off Pawls		C	C	C	Clean with dry cloth; replace if necessary.
Cleaning Blade		R	R	R	
Cleaning Brush			R		
Cleaning Brush Seal			C		
Cleaning Side Seals		I	I	I	
Cleaning Entrance Seal		C	C	C	Clean with dry cloth; replace if necessary
DEVELOPMENT UNIT					
Developer			R		
Side Seals		I	I	I	Dry cloth or blower brush
Development Filter		R	R	R	
Entrance Seal		C	C	C	Dry cloth or blower brush
Air Filter – Large		R	R	R	
Air Filter – Small		R	R	R	
Development Roller Shaft (Lower)		L	L	L	Lubricate with KS660 (G0049668)
Drive Gears		C	C	C	Blower brush

	EM	150K	300K	450K	NOTE
Toner Bottle Holder		C	C	C	Dry cloth or vacuum cleaner
Toner Hopper Entrance		C	C	C	Dry cloth
PAPER FEED (Main frame and by-pass tray)					
Registration Rollers		C	C	C	Water or alcohol
Relay Roller		C	C	C	Water or alcohol
Paper Dust Remover		C	C	C	Dry cloth
Paper Feed Roller (by-pass tray)		R	R	R	Replace the pick-up, feed, and separation rollers as a set. Check the counter value for the by-pass tray (SP7-204-6). If the value has reached 150k, replace the rollers. After replacing the rollers, reset the counter (SP7-816-6).
Registration Sensor		C	C	C	Blower brush
Relay Sensor		C	C	C	Blower brush
PAPER FEED (For each paper feed station)					
Paper Feed Guide Plate		C	C	C	Water or alcohol
Paper Feed Rollers		R	R	R	Replace pick-up, feed and separation roller as a set. Check the counter value for each paper tray station (SP7-204). If the value has reached 150k, replace the rollers. After replacing the rollers, reset the counter (SP7-816).
Vertical Transport Roller		C	C	C	Water or alcohol
Paper Feed Sensor		C	C	C	Blower brush
TRANSFER BELT UNIT					
Transfer Belt		C	R	C	Dry cloth
Cleaning Roller Cleaning Blade		R	R	R	
Transfer Entrance Guide Plate		C	C	C	Dry cloth
Belt Drive/Guide/ Bias Roller/Cleaning Roller			C		Alcohol
Transfer Exit Guide Plate		C	C	C	Dry cloth
FUSING/PAPER EXIT					
Hot Roller		R	R	R	
Hot Roller Bearings	I	I	I	I	Replace if necessary.
Pressure Roller		C	R	C	Use a suitable solvent.
Pressure Roller Bearings		I	R	I	
Fusing Thermistor	I	I	I	I	Replace if necessary.
Hot Roller Strippers	C	C	R	C	Water or alcohol
Oil Supply Roller Bushings	I	I	I	I	Replace if necessary.
Pressure Roller Cleaning Roller and Bushings		R	R	R	Replace as a set.

	EM	150K	300K	450K	NOTE
Oil Supply Roller		R	R	R	Replace these parts as a set.
Oil Supply Cleaning Roller		R	R	R	
Cleaning Roller Brush (EU only)		C	R	C	Dry cloth
Cleaning Roller Support Plate	I	I	I	I	Replace if out of shape
Fusing Entrance and Exit Guide Plates		C	C	C	Clean with water or alcohol
Transport/Exit Rollers			C		Water
Exit Anti-static Brush		I	I	I	
DUPLEX					
Entrance Sensor		C	C	C	Blower brush
Reverse Roller		C	C	C	Water or alcohol
Separation Rollers		C	C	C	
Duplex Roller		C	C	C	
Feed Rollers		C	C	C	
Entrance Anti-static Brush		I	I	I	
Reverse Junction Gate		C	C	C	Dry cloth
OTHERS					
Ozone Filter			R		
Used Toner Tank	I	I	I	I	Replace if necessary (about 1,500k copies).

	EM	80K	160K	240K	NOTE
ADF (the PM interval is for the number of originals that have been fed)					
Transport Belt	C	R	R	R	Belt cleaner
Feed Belt	C	R	R	R	Belt cleaner
Separation Roller	C	R	R	R	Dry or damp cloth
Pick-up Roller	C	R	R	R	Dry or damp cloth
Sensors	C	C	C	C	Belt brush
Drive Gears		L	L	L	Grease G501

	EM	150K	300K	450K	NOTE
LCT					
Paper Feed Roller		R	R	R	Check the counter value for the LCT (SP7-204-5). If the value has reached 150k, replace the rollers. After replacing the rollers, reset the counter (SP7-816-5).
Pick-up Roller		R	R	R	
Separation Roller		R	R	R	
Bottom Plate Pad		C	C	C	Dry or damp cloth
Paper Feed Clutch					Replace at 1,500k
Relay Clutch					Replace at 1,500k
Pick-up Solenoid					Replace at 1,500k

	EM	150K	300K	450K	NOTE
3,000-SHEET FINISHER					
Rollers	C				Clean with water or alcohol.
Brush Roller	I	I	I	I	Replace if necessary.
Discharge Brush	C	C	C	C	Clean with a dry cloth.
Sensors	C				Blower brush
Jogger Fences	I	I	I	I	Replace if necessary.
Punch Waste Hopper	I	I	I	I	Empty the hopper.

6. REPLACEMENT AND ADJUSTMENT

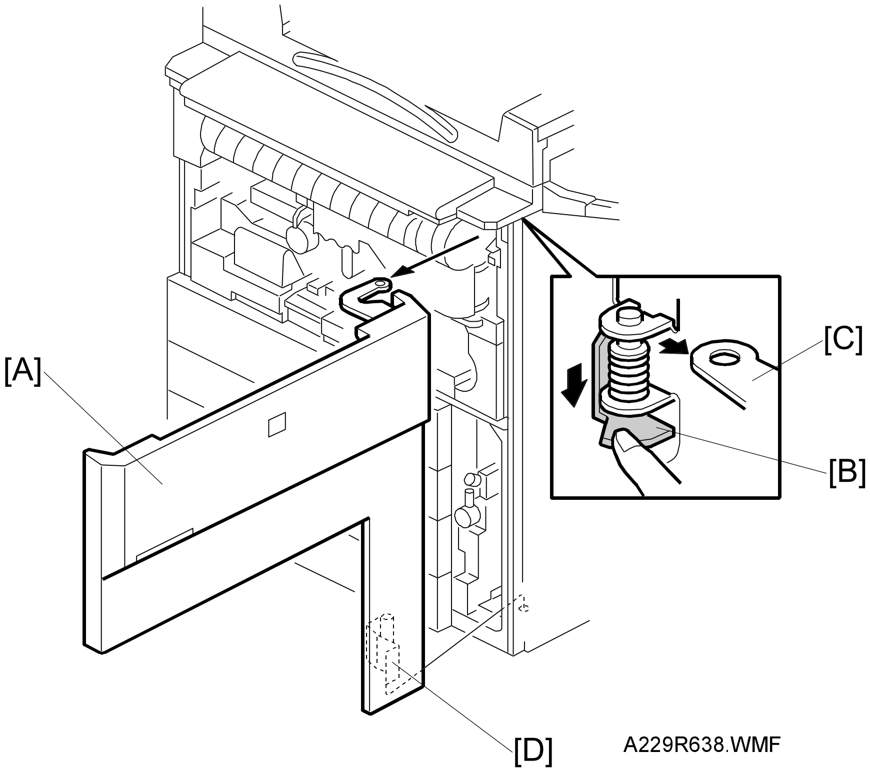
⚠CAUTION

Turn off the main power switch and unplug the machine before attempting any of the procedures in this section.

6.1 EXTERIOR

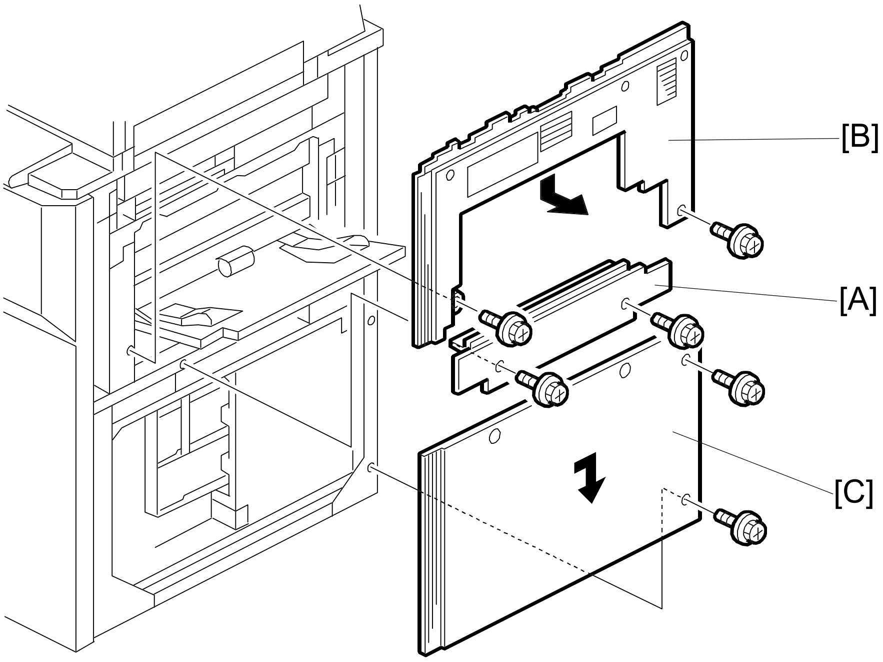
6.1.1 FRONT

Front Door



1. Open the front door [A].
2. Lower the pin [B] to unhook the upper hinge bracket [C].
3. Unhook the lower pin [D].

6.1.2 RIGHT



A229R639.WMF

Paper Feed Cover

1. Remove the paper feed cover [A] (2 screws).

Upper Right Cover

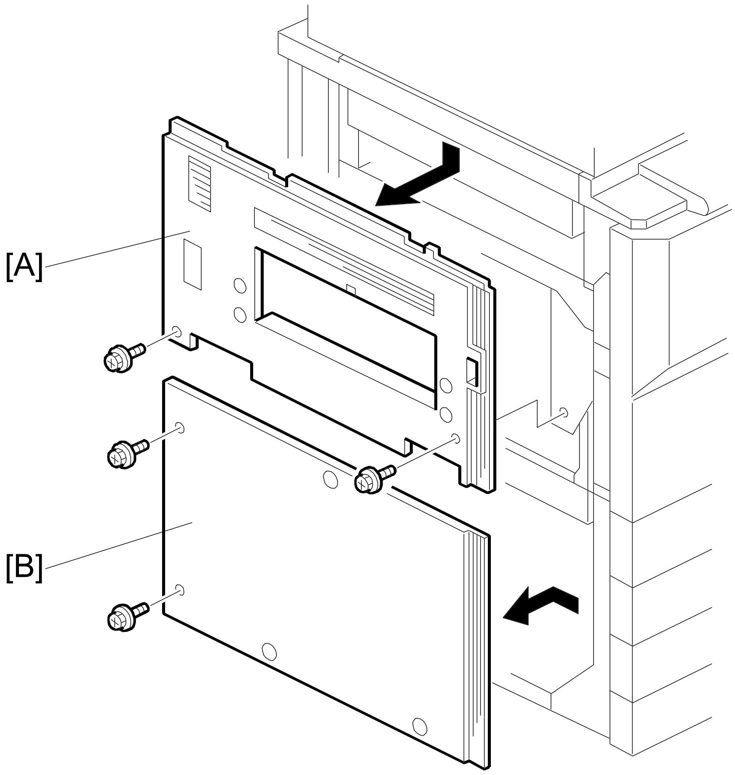
1. Remove the paper feed cover [A] (2 screws).
2. Remove the upper right cover [B] (2 screws).

Lower Right Cover

1. Remove the paper feed cover [A] (2 screws).
2. Remove the lower right cover [C] (2 screws).

NOTE: When re-installing the upper and lower right cover, put the hooks in the holes in the frame.

6.1.3 LEFT



A229R640.WMF

Upper Left Cover

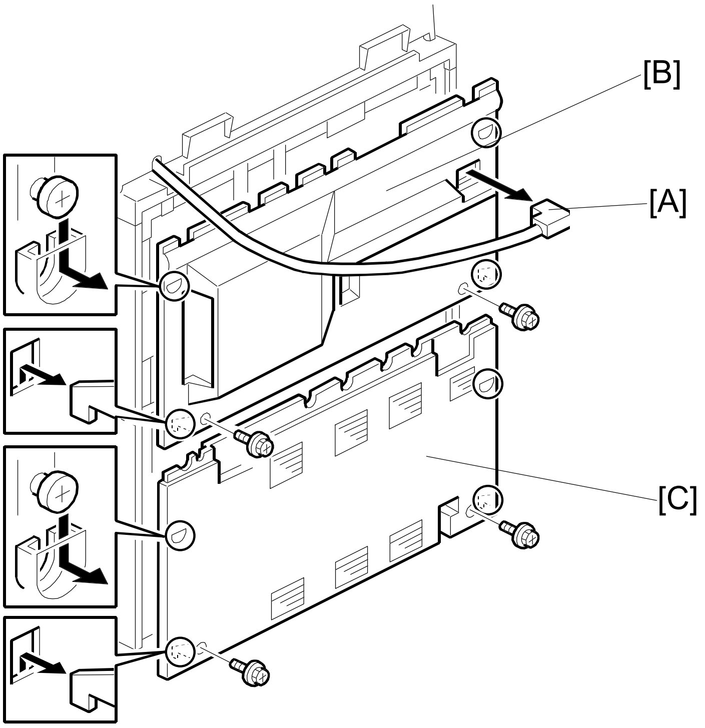
1. Remove the upper left cover [A] (2 screws).

Lower Left Cover

1. Remover the lower left cover [B] (2 screws).

NOTE: When re-installing the covers, put the hooks in the holes in the frame.

6.1.4 REAR



A229R641.WMF

Upper Rear Cover

1. Turn off the main switch.
2. Disconnect the ADF connector [A].
3. Remove the upper rear cover [B] (2 screws).

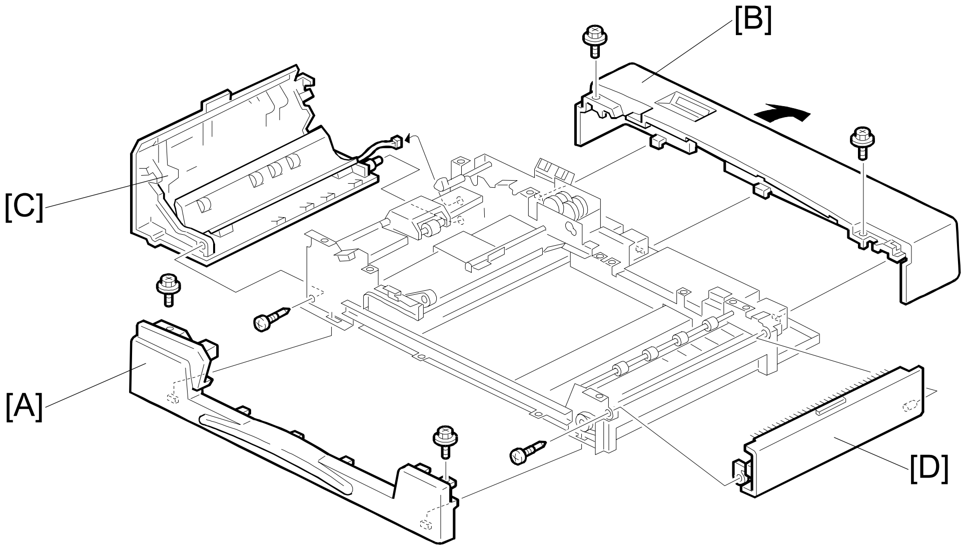
Lower Rear Cover

1. Turn off the main switch.
2. Remove the lower rear cover [C] (2 screws).

NOTE: When re-installing the upper and lower rear cover, hook the cover onto the frame as shown in the diagram..

6.2 DOCUMENT FEEDER

6.2.1 COVER REMOVAL



A806R101.WMF

Front Cover Removal

1. Remove the front cover [A] (2 screws).

Rear Cover Removal

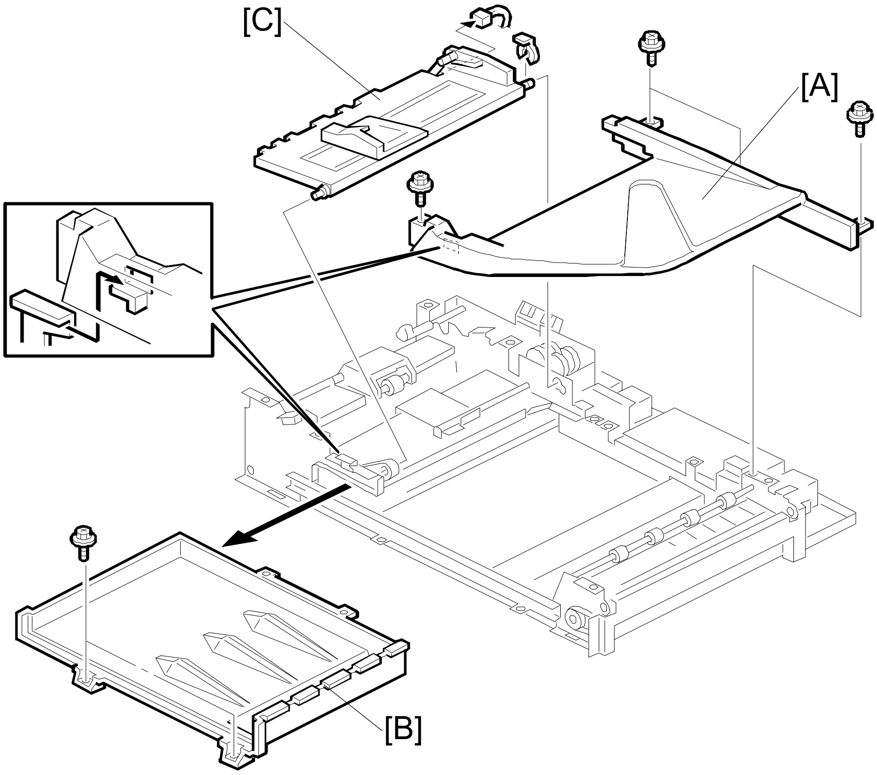
2. Remove the rear cover [B] (2 screws).

Left Cover Removal

1. Remove the front cover.
2. Remove the grounding wire (1 screw).
3. Remove the left cover [C] (1 screw, 1 connector).

Upper Exit Cover Removal

1. Remove the front cover.
2. Remove the upper exit cover [D] (1 screw).



A806R102.WMF

Original Tray Removal

1. Remove the front and rear covers.
2. Remove the original tray [A] (4 screws).

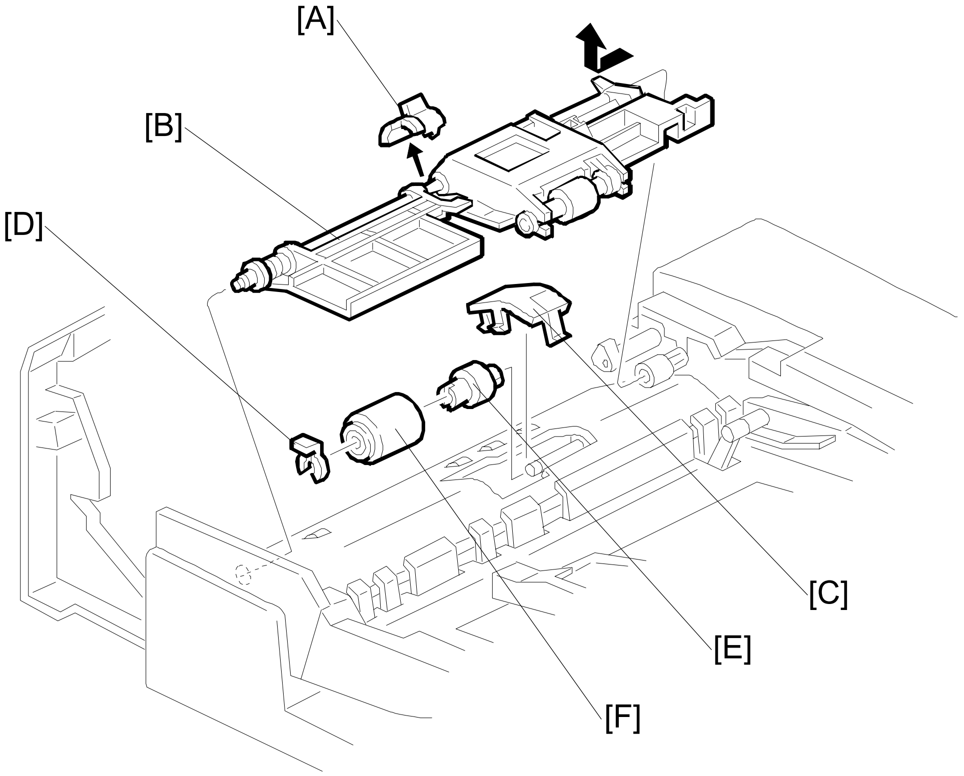
Upper Cover Removal

1. Remove the front and rear covers
2. Remove the original tray.
3. Remove the upper cover [B] (2 screws).

Bottom Plate Removal

1. Remove the front and rear covers.
2. Remove the original tray.
3. Remove the bottom plate [C] (1 snap ring, 1 connector).

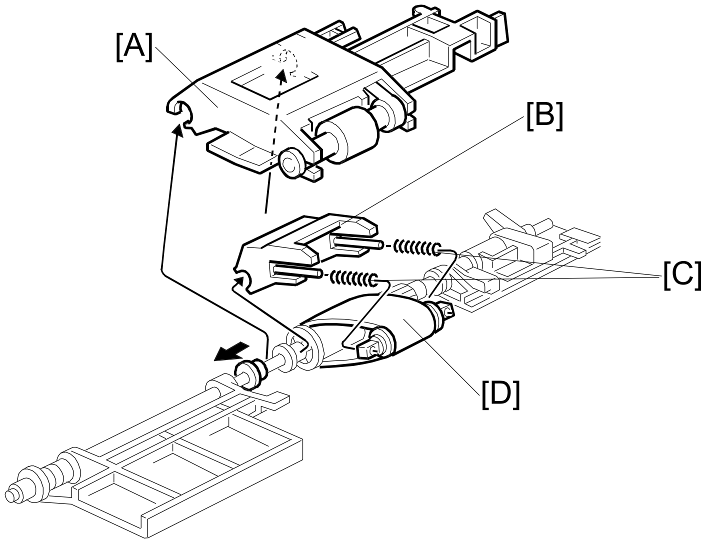
6.2.2 FEED UNIT REMOVAL AND SEPARATION ROLLER REPLACEMENT



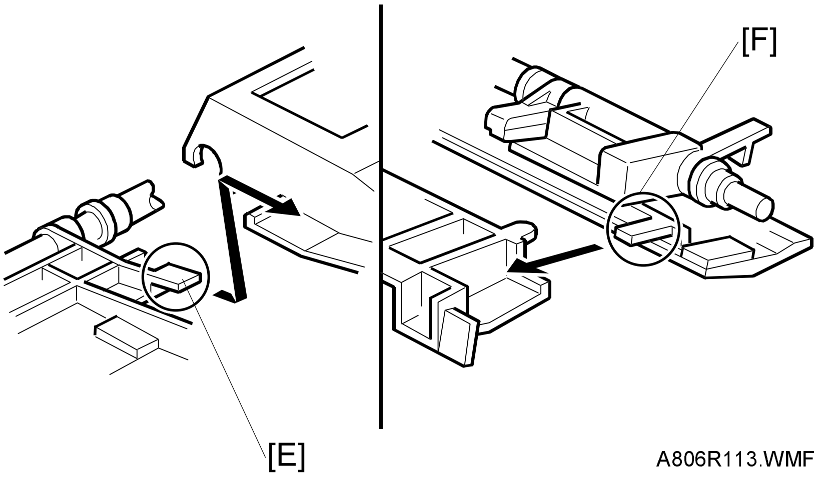
A806R103.WMF

1. Open the left cover.
2. Remove the clip [A].
3. Remove the feed unit [B].
   (Pull the feed unit to the front, release the shaft at the rear, and release the front bushing.)
4. Remove the separation roller cover [C].
5. Remove the snap ring [D].
6. Remove the torque limiter [E] and separation roller [F].

6.2.3 FEED BELT REPLACEMENT



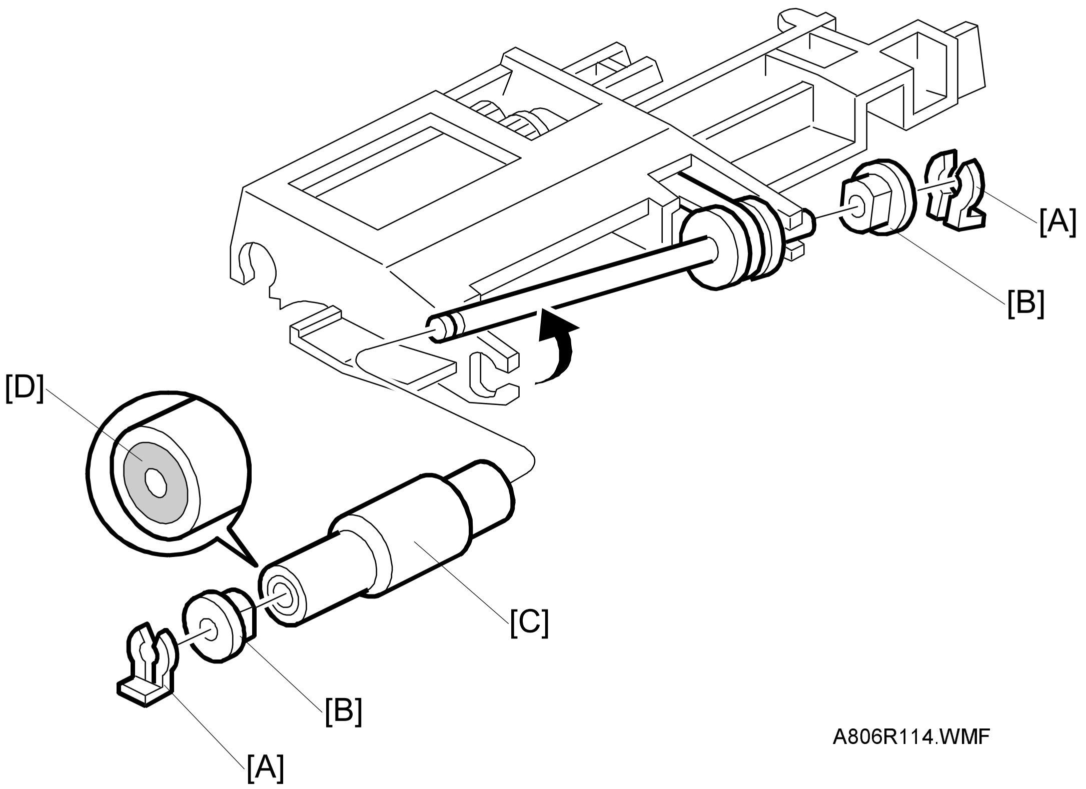
A806R104.WMF



A806R113.WMF

1. Remove the feed unit.
2. Remove the pick-up roller unit [A].
3. Remove the feed belt holder [B].
   NOTE: The springs [C] come off the feed belt cover easily.
4. Replace the feed belt [D].
   NOTE: When reinstalling the pick-up roller unit, make sure that levers [E] and [F] on the front and rear original guides are resting on the pick-up roller unit cover.

6.2.4 PICK-UP ROLLER REPLACEMENT

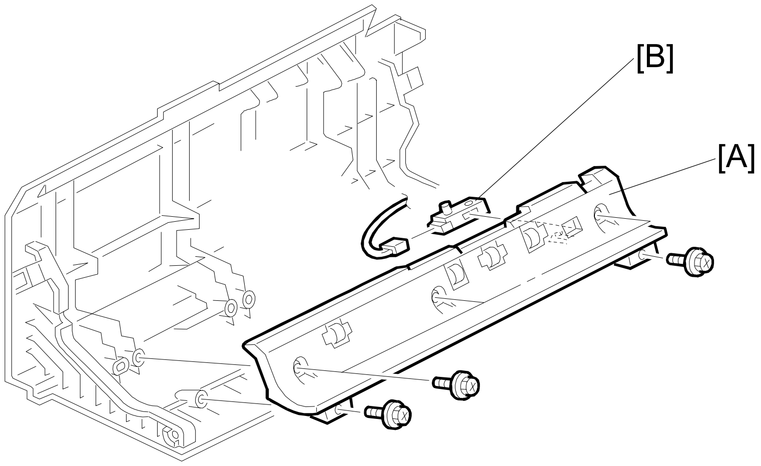


1. Open the left cover.
2. Remove the two snap rings [A].
3. Remove the two bushings [B].
4. Replace the pick-up roller [C].

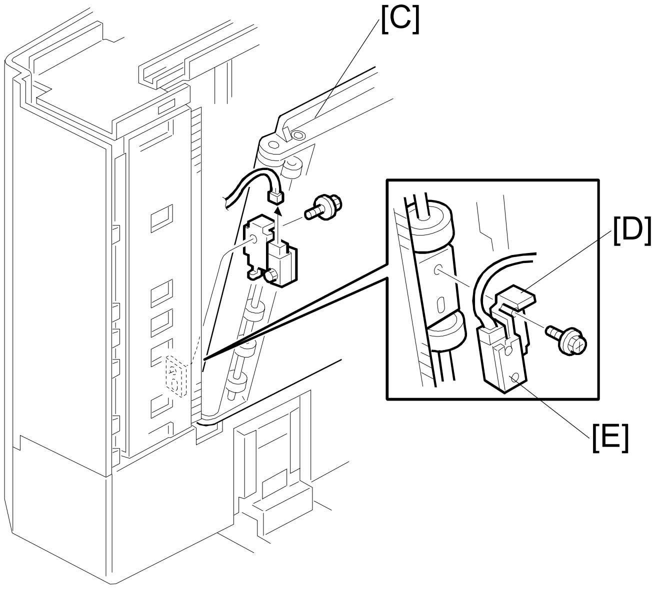
   NOTE: When reinstalling the pick-up roller, make sure that the one-way clutch [D] is not at the gear side.

6.2.5 SENSOR REPLACEMENT

Entrance and Registration Sensors



A806R105.WMF



A806R106.WMF

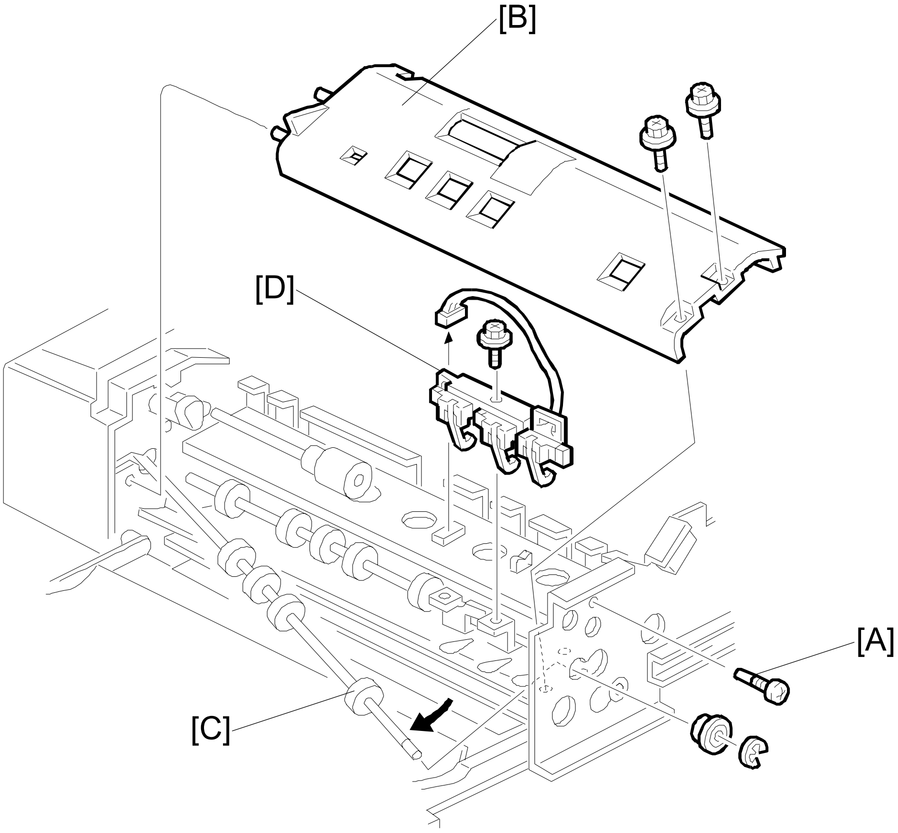
Entrance Sensor

1. Remove the left cover.
2. Remove the guide plate [A] (5 screws).
3. Replace the entrance sensor [B] (1 connector).

Registration Sensor

1. Release the transport belt unit [C].
2. Remove the sensor bracket [D] (1 screw).
3. Replace the registration sensor [E] (1 connector, 1 screw).

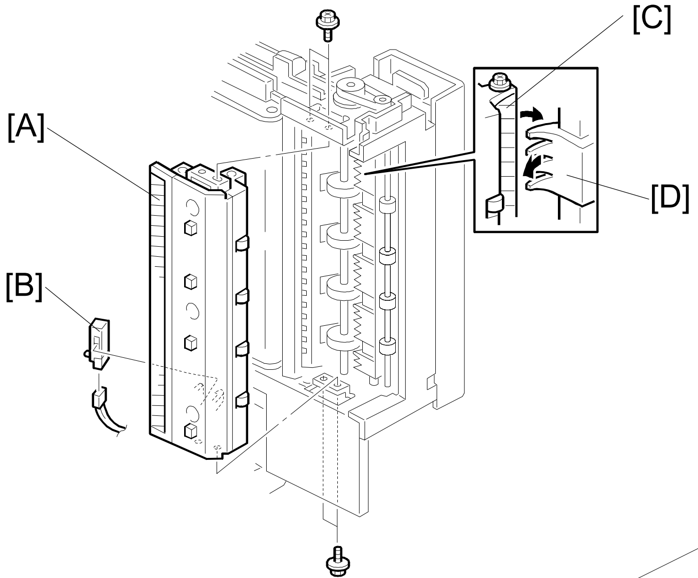
Width Sensor



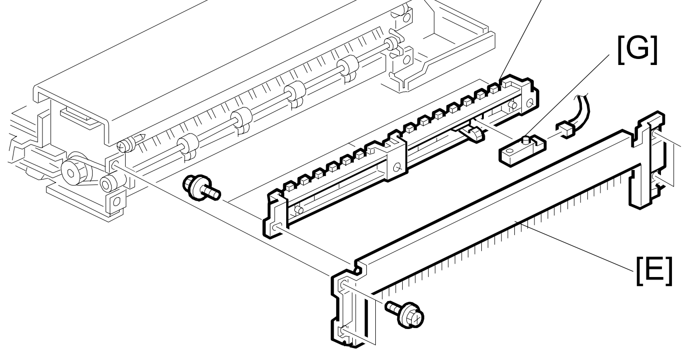
A806R107.WMF

1. Remove the feed unit.
2. Remove the front cover.
3. Remove the stopper screw [A].
4. Remove the guide plate [B] (2 screws).
5. Release the front end of the upper transport roller [C] (1 bushing, 1 E-ring).
6. Remove the sensor unit [D] (1 screw).
7. Replace the width sensor.

Exit Sensor and Inverter Sensor



A806R109.WMF



A806R108.WMF

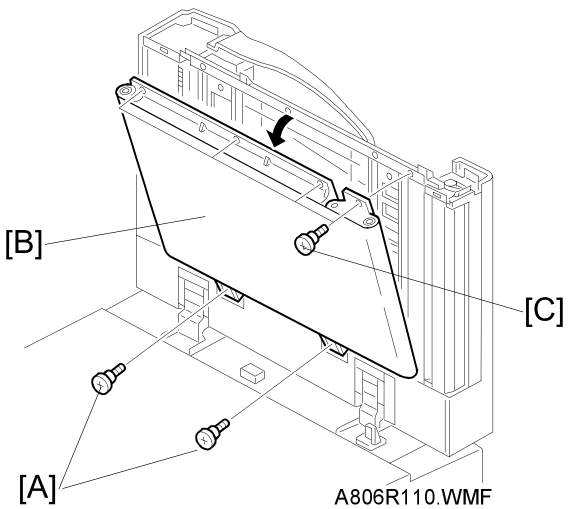
Exit Sensor

1. Remove the front and rear covers.
2. Remove the exit guide unit [A] (4 screws).
3. Replace the exit sensor [B] (1 connector).
   NOTE: When reinstalling the exit guide unit, make sure that the guide plate [C] on the exit unit is over the exit gate [D].

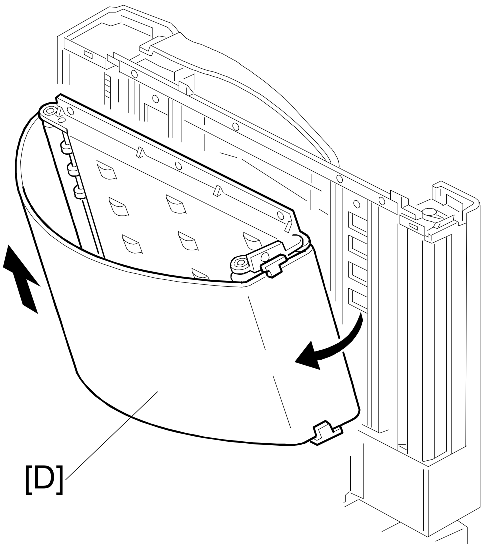
Inverter Sensor

1. Remove the front and rear covers.
2. Remove the right lower cover [E] (4 screws).
3. Remove the guide plate [F] (3 screws).
4. Replace the inverter sensor [G] (1 connector).

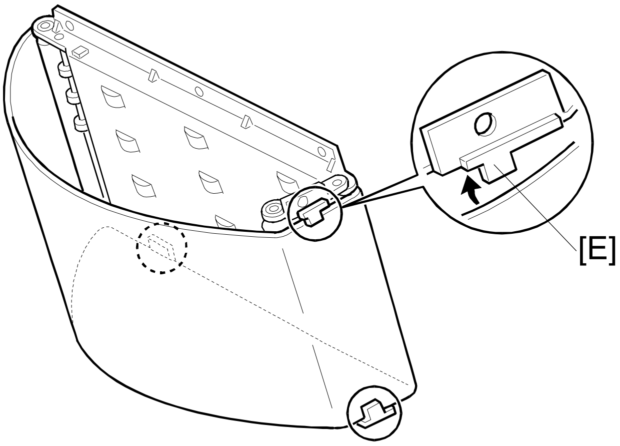
6.2.6 TRANSPORT BELT REPLACEMENT



A806R110.WMF



A806R111.WMF



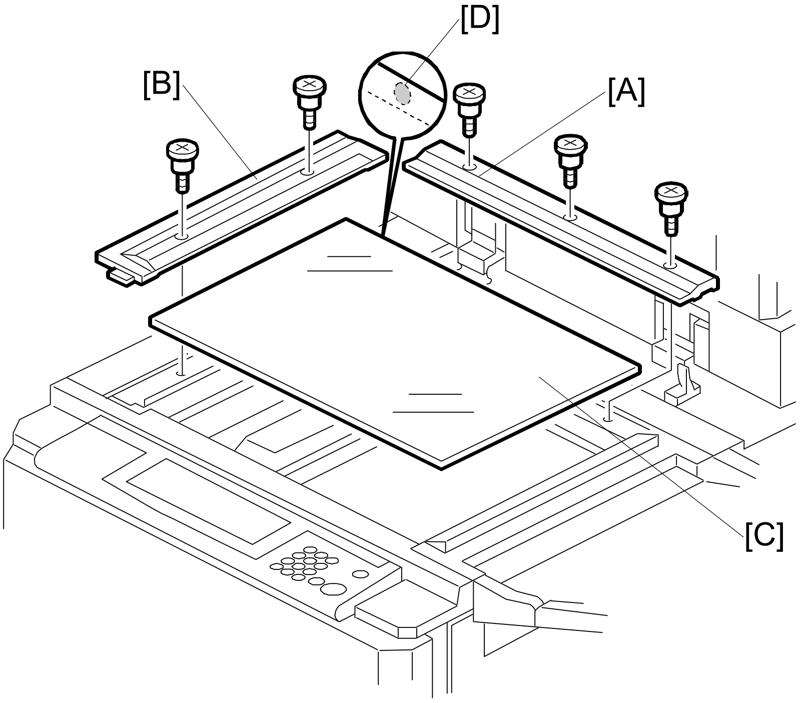
A806R112.WMF

1. Remove the front cover.
2. Remove the lower two screws [A] securing the transport belt assembly [B].
3. Remove the upper four screws [C] securing the transport belt assembly.
4. Bend up the transport belt assembly extension.
5. Pull off the transport belt [D] and replace it.

NOTE: 1) When releasing the transport belt assembly, make sure to remove the two lower screws first.
2) When installing the transport belt, make sure that the belt runs under the belt guide spacers [E].
3) When securing the transport belt assembly with the six screws, make sure to secure the four upper screws first.

6.3 SCANNER UNIT

6.3.1 EXPOSURE GLASS

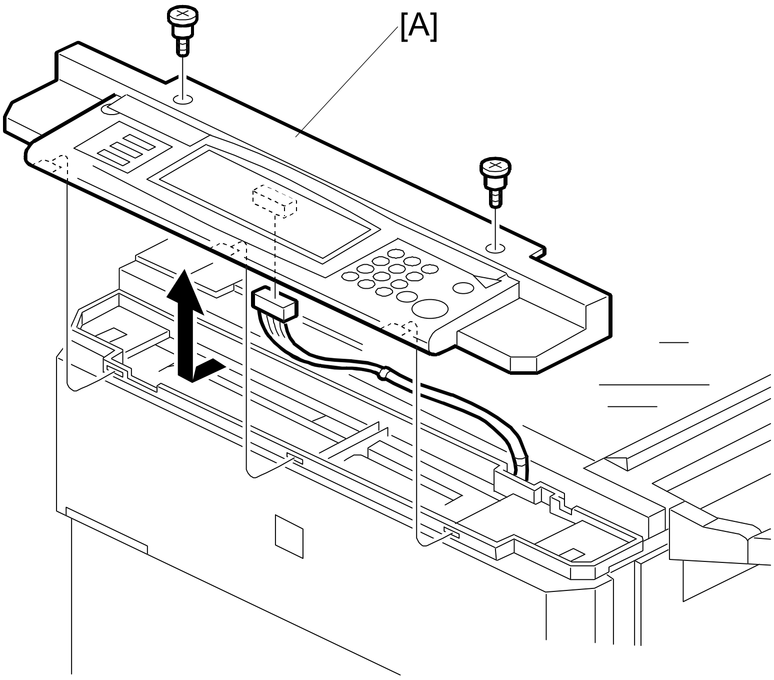


A229R657.WMF

1. Open the ADF.
2. Remove the rear scale [A] (3 screws).
3. Remove the left scale [B] (2 screws).
4. Remove the exposure glass [C].

NOTE: When reinstalling the exposure glass, make sure that the mark [D] is positioned at the rear left corner, as shown.

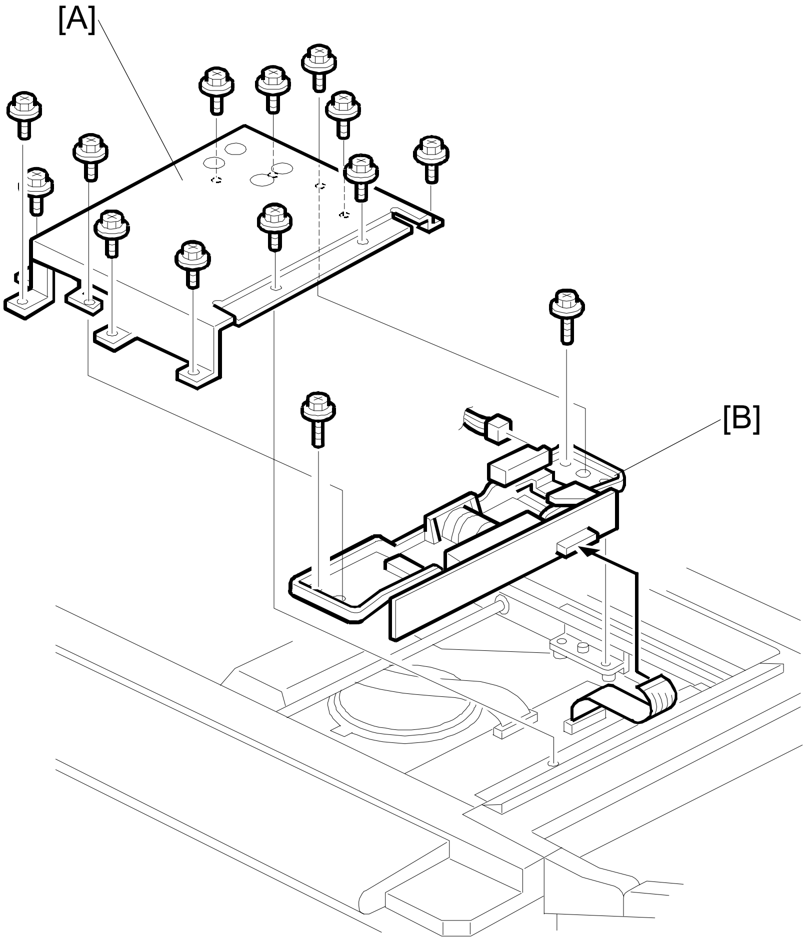
6.3.2 OPERATION PANEL



A229R675.WMF

1. Remove the operation panel [A] (2 screws, 1 connector).

6.3.3 LENS BLOCK

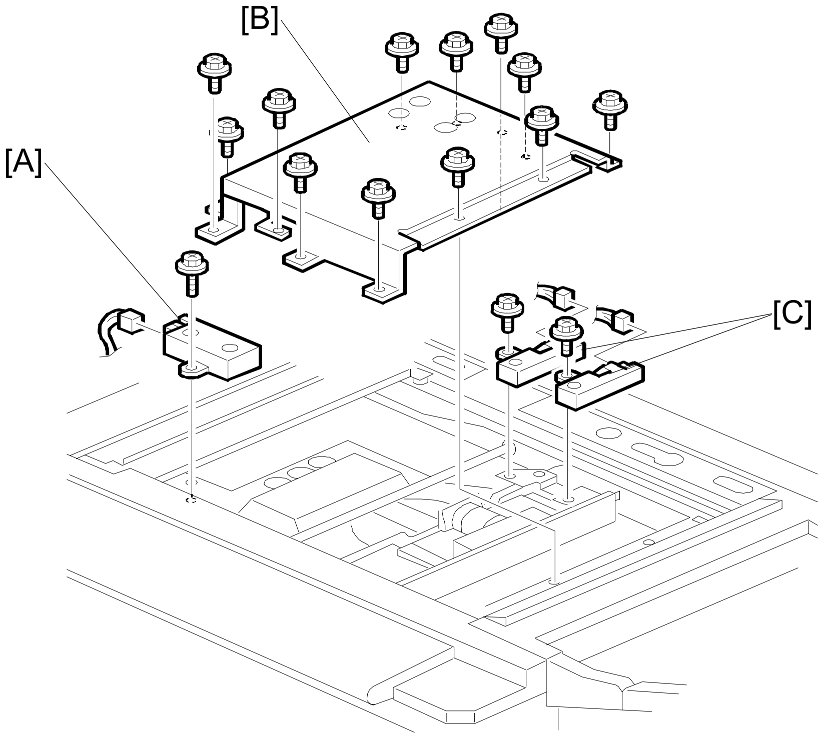


A229R659.WMF

1. Remove the exposure glass. (See Exposure Glass.)
2. Remove the lens cover [A] (12 screws).
3. Replace the lens block assembly [B] (2 screws, 3 connectors).
4. Do the scanner and printer copy adjustments. (See Replacement and Adjustment – Copy Image Adjustments.)

NOTE: When putting back the lens cover, take care not to pinch the operation panel cable.

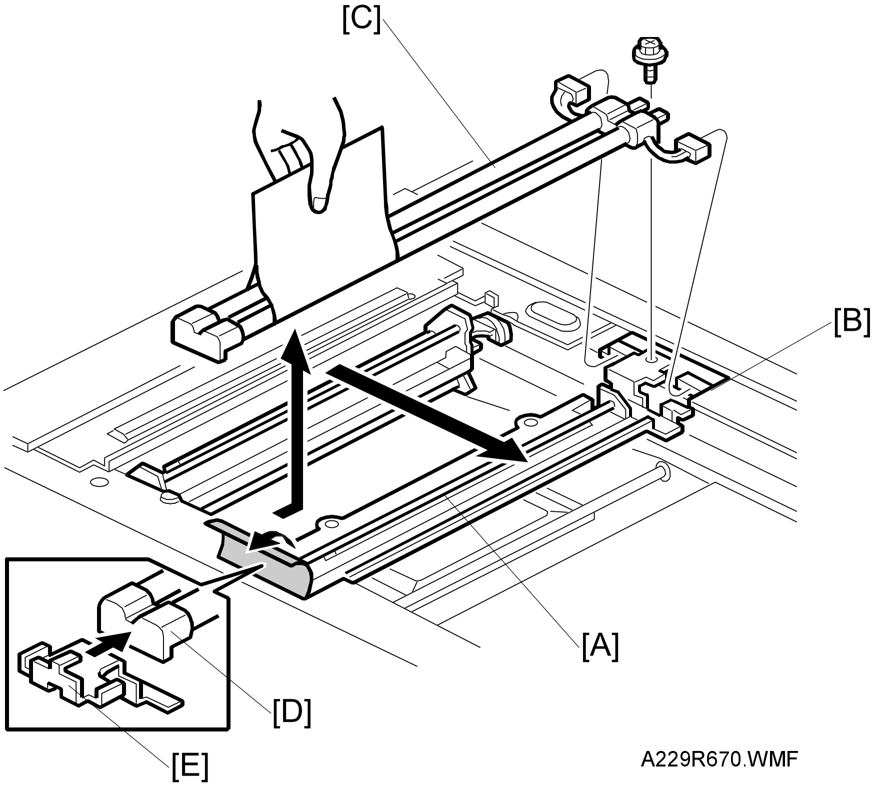
6.3.4 ORIGINAL SIZE SENSORS



A229R658.WMF

1. Remove the exposure glass. (See Exposure Glass.)
2. Remove the original width sensor [A] (1 screw, 1 connector).
3. Remove the lens cover [B] (12 screws).
4. Remove the original length sensors [C] (1 screw and 1 connector each).

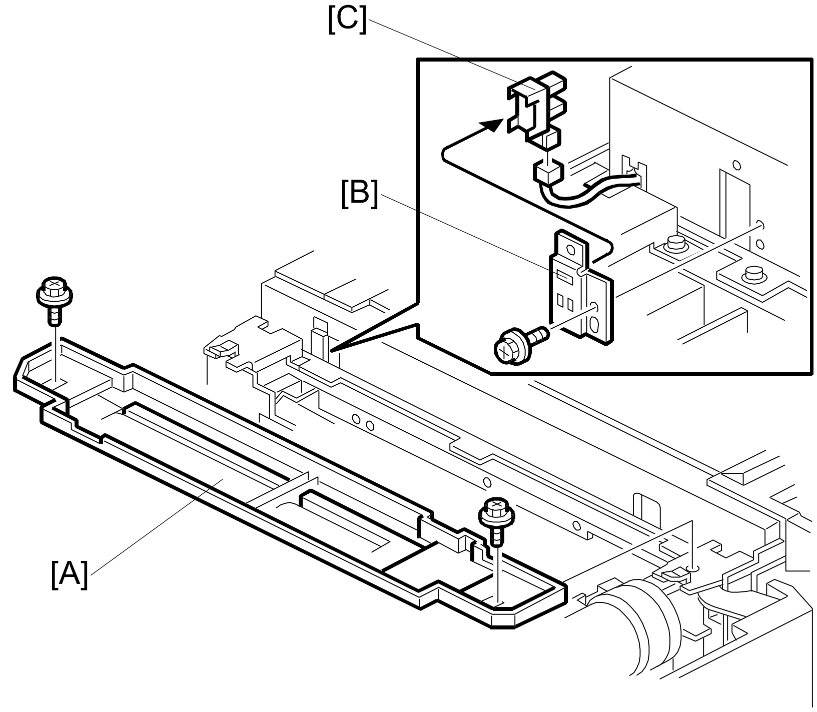
6.3.5 EXPOSURE LAMP



1. Remove the ADF.
2. Remove the scanner rear cover. (See Scanner Wire.)
3. Remove the exposure glass. (See Exposure Glass.)
4. Slide the 1st scanner [A] to the cutout [B] in the rear scanner frame.
5. Remove the exposure lamp [C] (1 screw, 2 connectors).
   NOTE: Do not touch the glass surface of the exposure lamp with fingers.

NOTE: When reinstalling, make sure that the front side of the lamp [D] is properly positioned on the lamp holder [E] as shown.

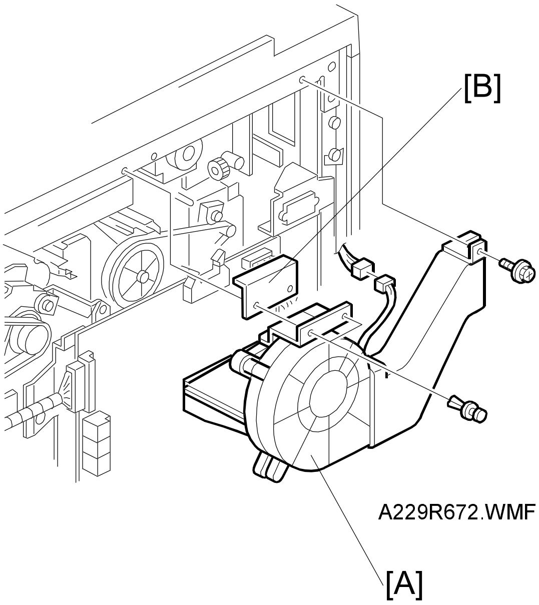
6.3.6 SCANNER H.P SENSOR



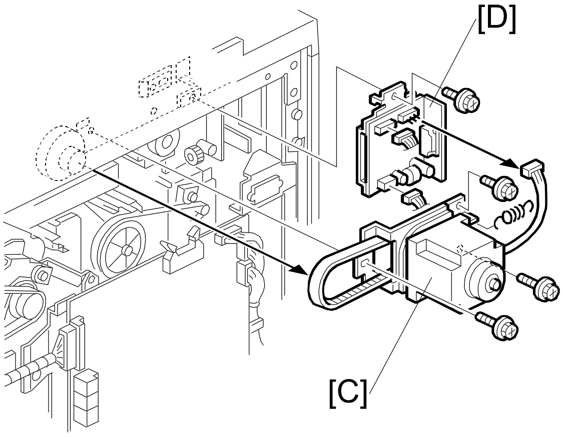
A229R671.WMF

1. Remove the operation panel. (See Operation Panel.)
2. Open the front door and swing out the toner bottle.
3. Remove the operation panel bottom cover [A] (4 screws – see Scanner Wire).
4. Remove the scanner H.P sensor bracket [B] (1 screw).
5. Remove the scanner H.P sensor [C] (1 connector).

6.3.7 SCANNER MOTOR/SCANNER MOTOR DRIVE BOARD



A229R672.WMF



A229R673.WMF

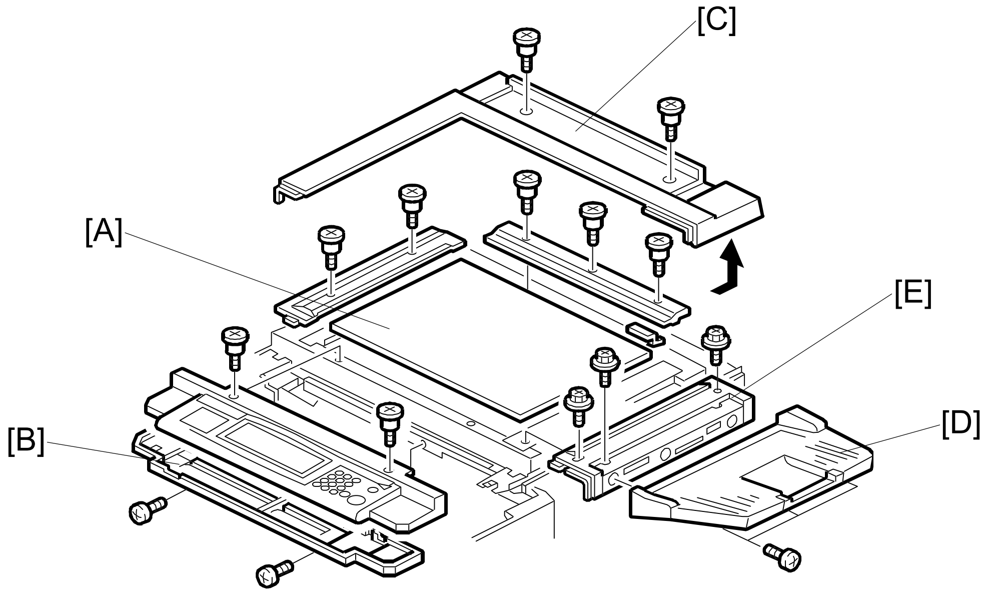
Scanner Motor

1. Remove the scanner rear cover. (See Covers - Rear.)
2. Remove the exhaust fan [A] (1 screw, 1 connector, 2 snap fit screws).
   NOTE: Do not lose the mylar [B].
3. Remove the scanner motor [C] with the bracket (3 screws, 1 connector, 1 spring).
4. Do the scanner and printer copy adjustments. (See Replacement and Adjustment – Copy Image Adjustments.)

Scanner Motor Drive Board

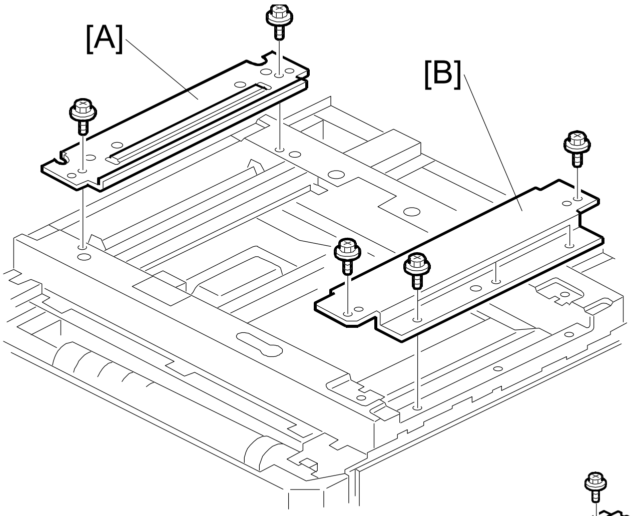
1. Do steps 1 and 2 of the scanner motor removal.
2. Replace the scanner motor drive board [D] (1 screw and 3 connectors).

6.3.8 SCANNER WIRES

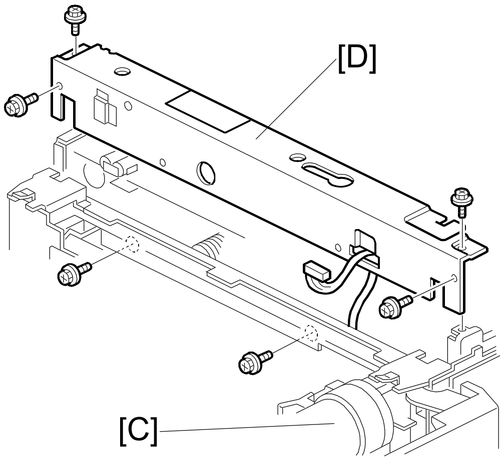


A229R674.WMF

1. Remove the ADF.
2. Remove the following parts:
   - Exposure glass [A] (See Exposure Glass.)
   - Operation panel under cover [B] (See Scanner H.P Sensor.)
   - Scanner rear cover [C] (2 screws)
   - Original exit tray [D] (3 screws)
   - Upper right cover [E] (4 screws).

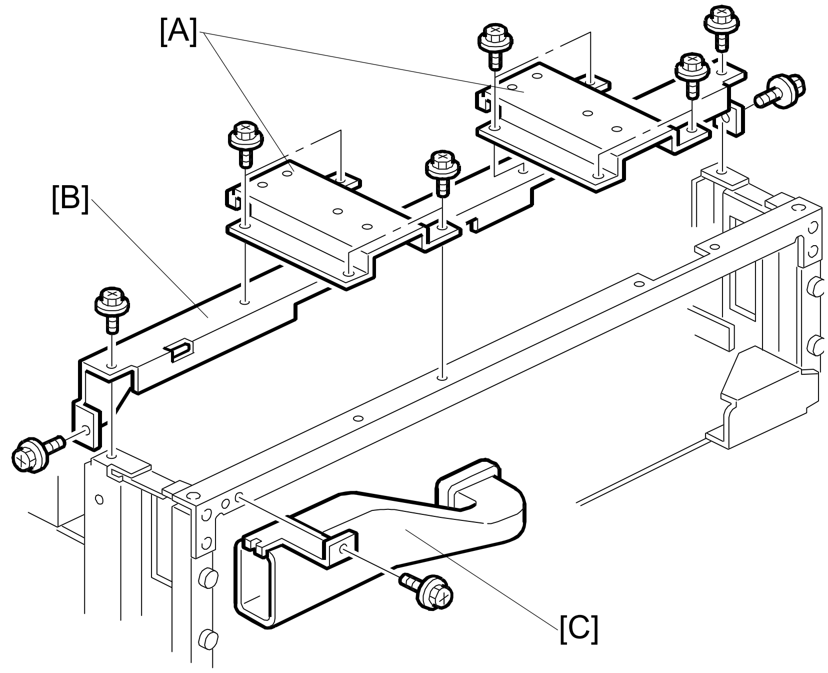


A229R681.WMF



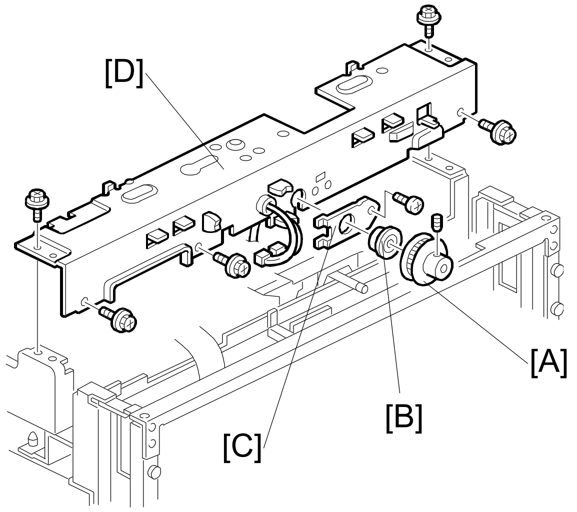
A229R682.WMF

3. Remove the left upper stay [A] (2 screws).
4. Remove the right upper stay [B] (3 screws).
5. Remove the shutter inner cover (see Development Unit) and swing out the toner bottle holder [C].
6. Remove the front frame [D] (6 screws).

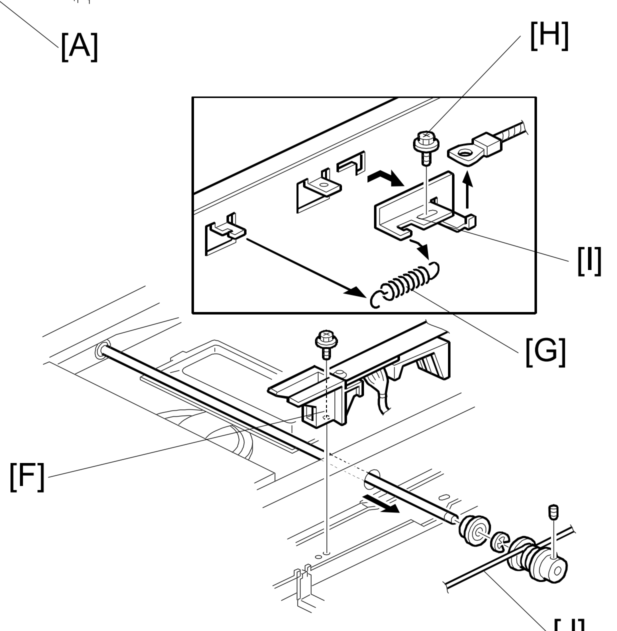


A229R683.WMF

7. Remove the ARDF support brackets [A] (4 screws each).
8. Remove the scanner upper frame [B] (4 screws).
9. Remove the fan duct [C] (1 screw).



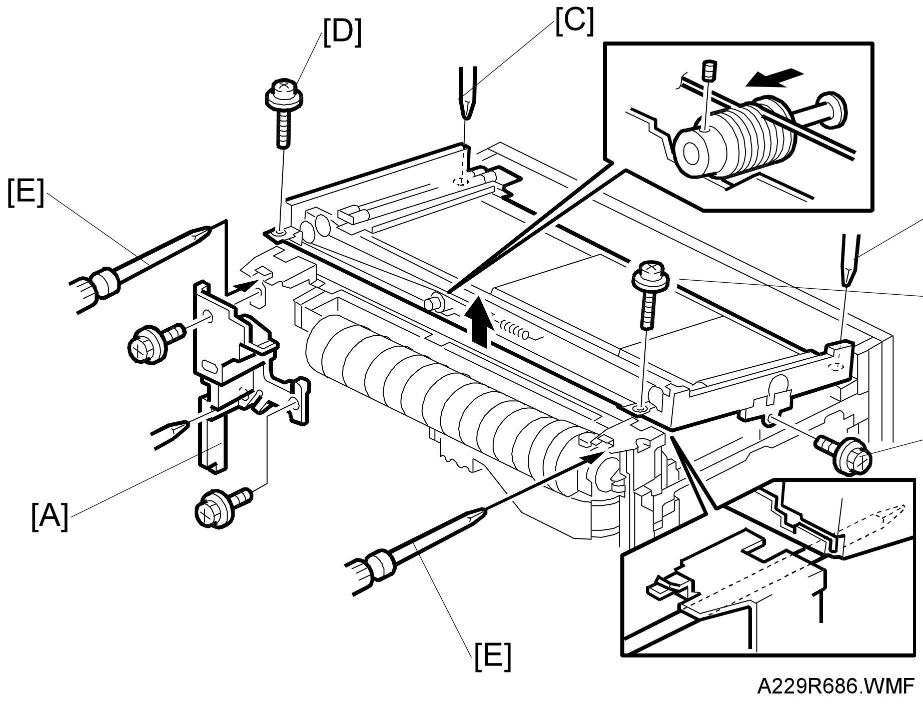
A229R684.WMF



A229R685.WMF

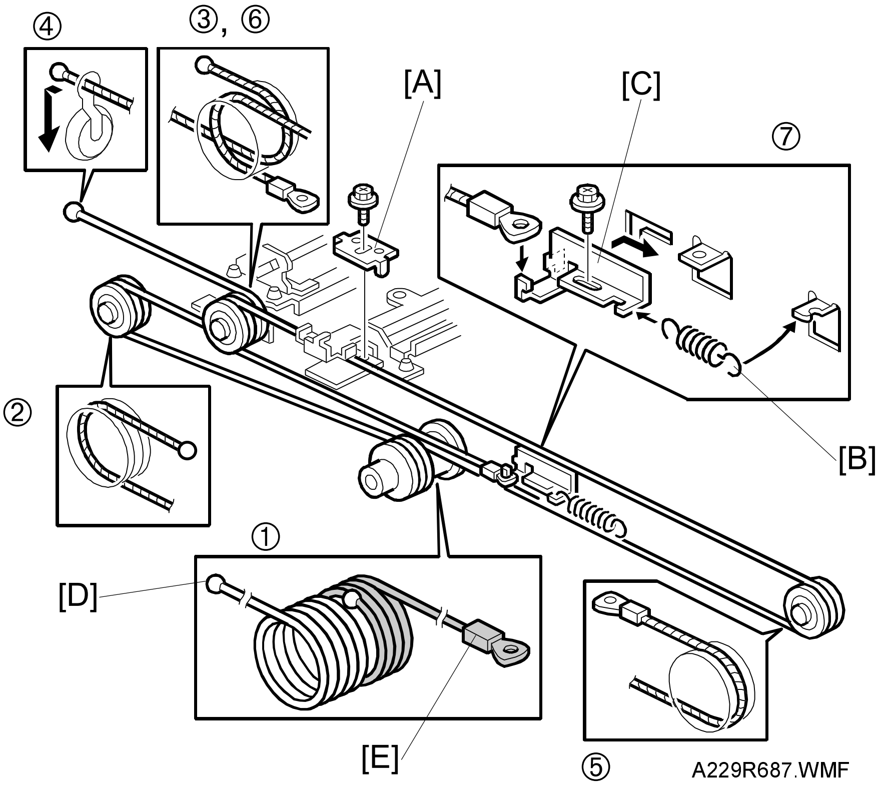
Rear Scanner Drive Wire

11. Remove the scanner motor and the scanner motor drive board. (See Scanner Motor and Scanner Motor Drive Board.)
12. Remove the drive pulley [A] (1 Allen screw), bearing [B], and the bearing holder bracket [C] (1 screw).
13. Remove the scanner rear frame [D] (5 screws).
14. Remove the rear scanner wire bracket [no illustration] (1 screw).
15. Remove the cable guide [F] (1 screw).
16. Remove the tension spring [G].
17. Loosen the screw [H] securing the wire tension bracket [I], and remove the rear scanner wire [J].



Front Scanner Drive Wire

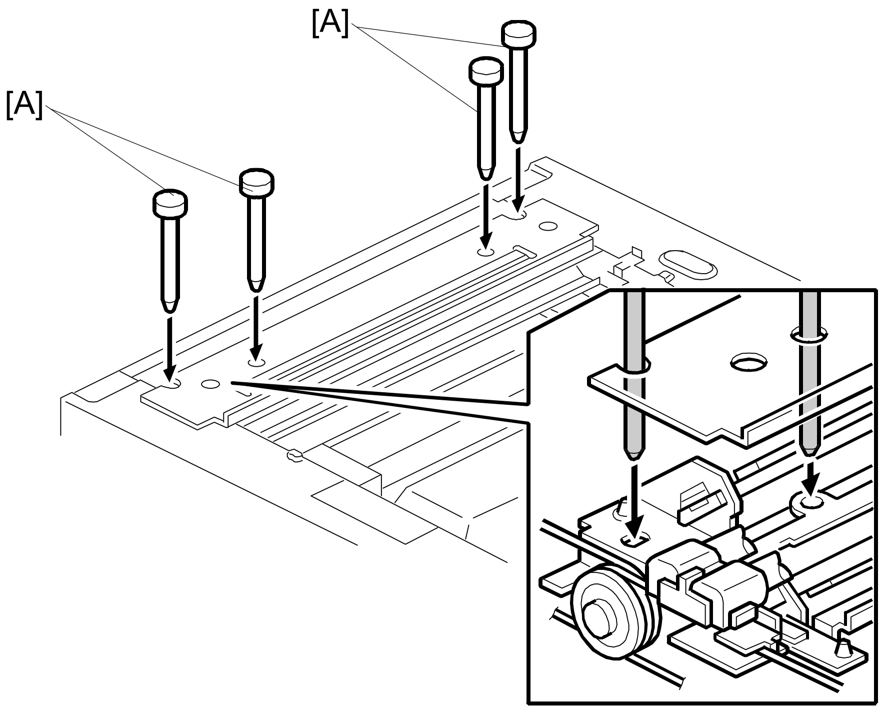
18. Remove the inner cover [A] (3 screws).
19. Remove the HDD grounding screw [B].
20. **Loosen** the rear scanner securing screws [C].
21. **Remove** the front scanner securing screws [D].
22. Gently lift up the scanner unit from the front side until the front pulley is accessible. Then put in a pair of screw drivers [E] in the position shown, to hold the unit open.
    NOTE: There are cables around the scanner unit. Make sure not to lift up the scanner unit more than necessary.



23. Remove the front scanner wire bracket [A], tension spring [B], and the wire tension bracket [C] (1 screw). Then remove the front scanner wire.

Reinstallation

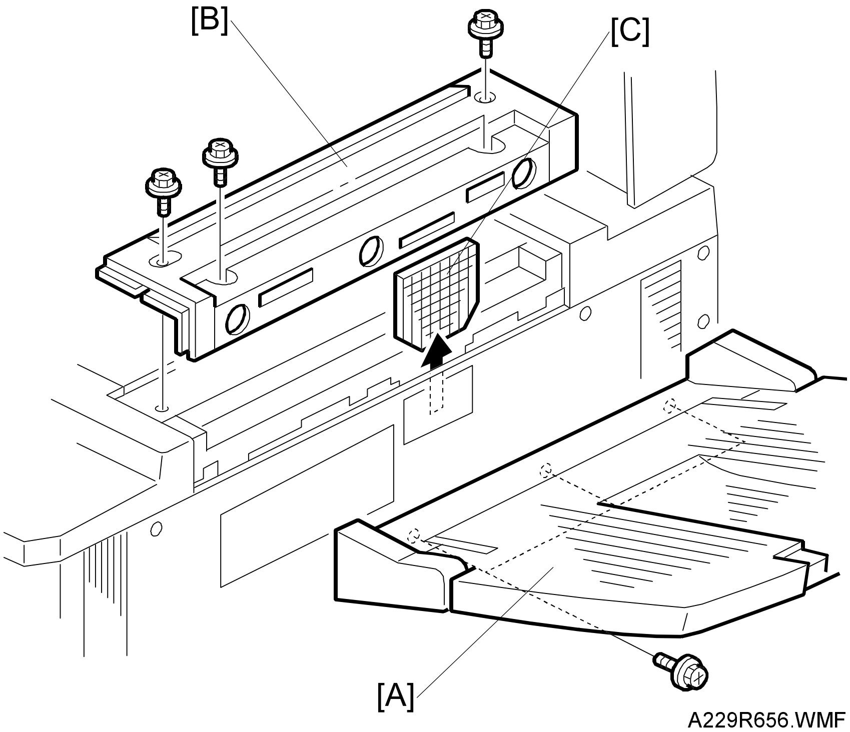
24. While making sure of the direction, place the bead on the middle of the wire in the pulley hole. Then wind the wire (ball side) [D] clockwise 7 times, and the other side (ring side) [E] once as shown (①). Secure the pulley with tape to keep this condition.
25. Place the pulley on the scanner drive shaft.
26. Secure the pulley with the Allen screw in the position where the Allen screw hole faces up.
27. Wind the end of the new wire with the ball as shown (②, ③, and ④).
28. Wind the end of the new wire with the ring as shown (⑤, ⑥, and ⑦).
29. Install the tension spring on the tension bracket (⑦), and slightly tighten the tension bracket.



A229R689.WMF

30. Install the 1st scanner and adjust the position with the positioning tools (P/N A0069104) [A].
31. Secure the 1st scanner with the scanner wire bracket (1 screw).
32. Fully tighten the tension bracket.
33. Remove the positioning tools. After sliding the scanner to the right and left several times, set the positioning tools to check the scanner wire bracket and tension bracket again.
34. Reassemble the scanner and do the scanner and printer copy adjustments (see Replacement and Adjustment – Copy Image Adjustments).

6.3.9 OPTICS DUST FILTER



A229R656.WMF

1. Remove the right exit tray [A] (3 screws).
2. Remove the upper right cover [B] (4 screws).
3. Replace the optics dust filter [C].

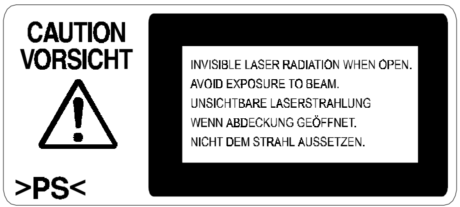
6.4 LASER UNIT

⚠WARNING

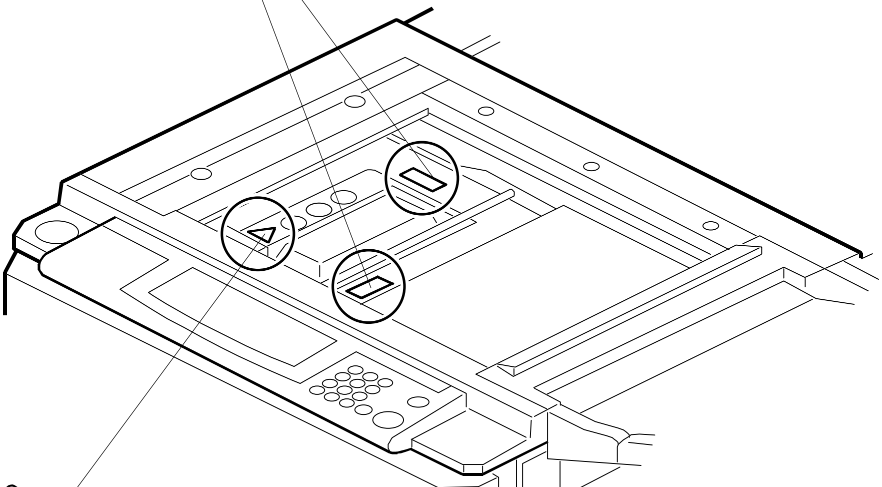
Turn off the main power switch and unplug the machine before attempting any of the procedures in this section. Laser beams can seriously damage your eyes.

6.4.1 CAUTION DECAL LOCATIONS

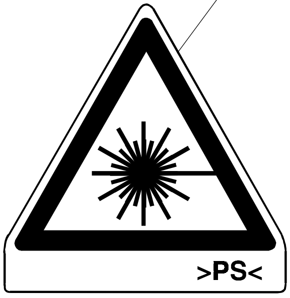
There are three caution decals in the laser section as shown below.


CAUTION
VORSICHT
INVISIBLE LASER RADIATION WHEN OPEN.
AVOID EXPOSURE TO BEAM.
UNSICHTBARE LASERSTRAHLUNG
WENN ABDECKUNG GEÖFFNET.
NICHT DEM STRAHL AUSSETZEN.
>PS<

CAUTN-V.WMF

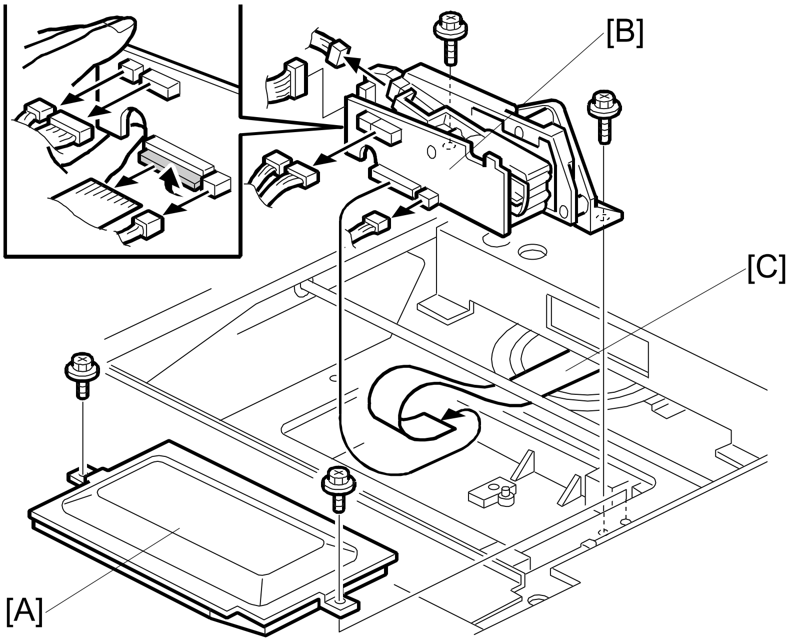


A229I514.WMF



LASER-3.WMF

6.4.2 LD UNIT REPLACEMENT



A229R500.WMF

⚠WARNING

Turn off the main power switch and unplug the machine before attempting this procedure. Laser beams can seriously damage your eyes.

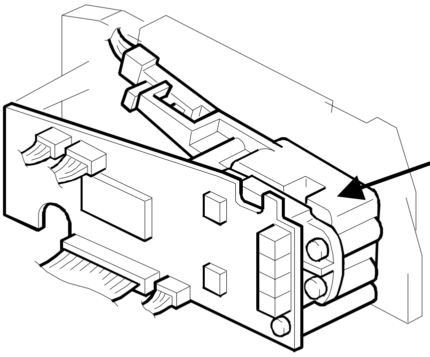
1. Remove the exposure glass. (See Exposure Glass Removal.)
2. Remove the LD cover [A] (2 screws).
3. Replace the LD unit [B] (2 screws and 6 connectors).
   NOTE: When disconnecting the cables, hold the LD unit.
4. When reinstalling, make sure that the flat cable [C] is mounted above the LD unit, and that the rotation of the unit is not interrupted.
5. After replacing the LD unit, check the laser beam pitch adjustment and readjust it if necessary (see the following procedure).
6. Do SP 2-962 (process control initialization).
   NOTE: Be sure that the cable does not block LD unit rotation after replacing the LD unit. If the LD unit cannot rotate smoothly to change the resolution, SC329 (LD unit home position error) may occur.

6.4.3 LASER BEAM PITCH ADJUSTMENT

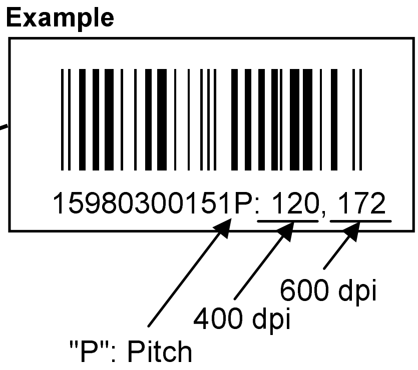
There are two laser beam pitch adjustment procedures: one for 400 dpi, and one for 600 dpi. These adjustments use the following SP modes.

- SP2-109-1: Laser Beam Pitch Adjustment – 400 dpi
- SP2-109-2: Laser Beam Pitch Adjustment – 600 dpi
- SP2-109-3: Laser Beam Pitch Initial Setting – 400 dpi
- SP2-109-4: Laser Beam Pitch Initial Setting – 600 dpi
- SP2-902-2, no.12: IPU Test Pattern – Cross Stitch – 400 dpi
- SP2-902-2, no.13: IPU Test Pattern – Cross Stitch – 600 dpi

1. Perform SP2-109-8 (Beam Pitch Data Reset).
2. Input the value for 400 dpi that is printed on the LD unit into SP2-109-1. Use the value printed after “P” on the new LD unit as shown below.



A229R572.WMF



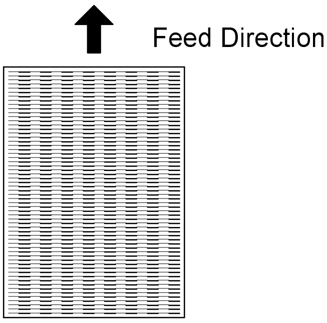
A229R573.WMF

NOTE: Do not use values printed after a “V”.

3. Press the “Enter” key.
4. Perform SP2-109-3.
5. Print the 400-dpi test pattern onto A3 (11”x17”) paper using SP2-902-2 no.12 (cross stitch). (See Service Tables - Test Pattern Printing).
6. Write the value of SP2-109-1 on the test pattern which was input at step 2.
7. Change the value of SP2-109-1 and print another test pattern, repeating steps 2 to 5. Print about 5 patterns with different values for SP2-109-1 (e.g. “48”, “96”, “192”, “240”).
8. Check this test pattern. If the laser beam pitch is not correct, the image looks like a black vertical stripe pattern.
   NOTE: If the laser beam pitch is correct, the vertical stripe is not so noticeable. If the value is not correct, the vertical stripe pattern is darker.

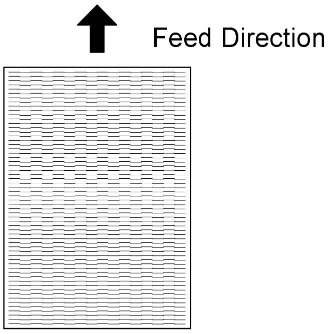
9. Adjust the laser beam pitch position until the thin lines are of uniform thickness (no striping effect should appear on the printout), doing steps 2, 3, and 4. (In step 2, input a value which is estimated to be correct, then do steps 3 and 4, then if necessary go back to step 2 and try another value.)
10. After adjusting the laser beam pitch for 400 dpi, adjust the laser beam pitch for 600 dpi, using the same procedure as for 400 dpi (use the SP modes for 600 dpi).

Adjustment not complete



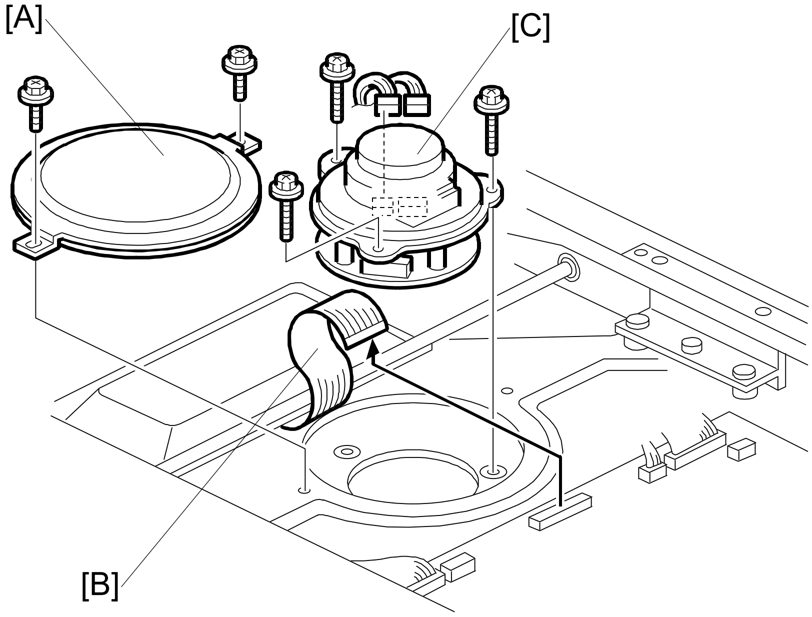
A229R532.WMF

Adjustment complete



A229R533.WMF

6.4.4 POLYGON MIRROR MOTOR REPLACEMENT



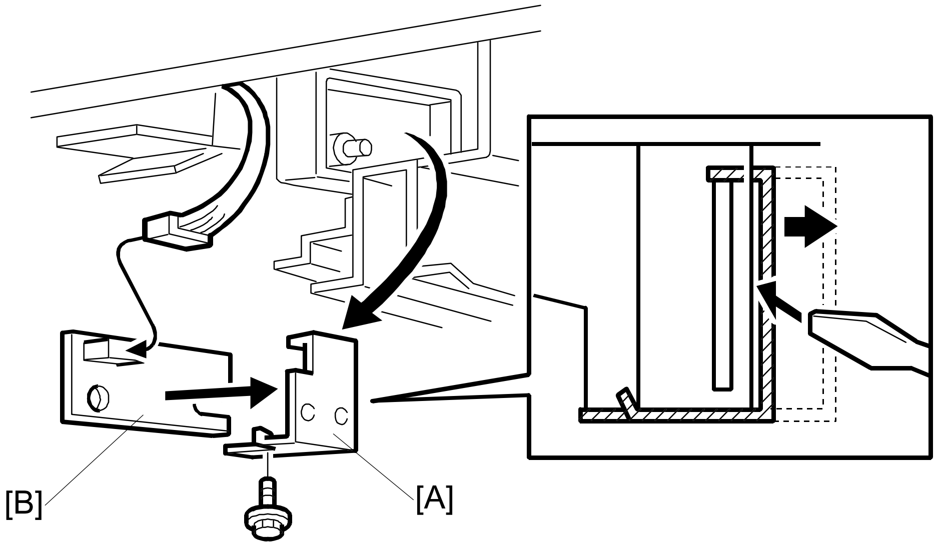
A229R501.WMF

1. Turn off the main power switch and unplug the machine.
2. Remove the exposure glass. (See Exposure Glass Removal.)
3. Remove the lens cover. (See Lens Block Assembly Replacement.)
4. Remove the lens block assembly. (See Lens Block Assembly Replacement.)
5. Remove the polygon mirror motor cover [A] (2 screws).
6. Disconnect the LD unit flat cable [B].
7. Replace the polygon mirror motor [C] (3 screws and 2 connectors.)

NOTE: When reinstalling, make sure that the polygon mirror opening faces the right. Also, do not pull on the LD flat cable.

8. Do the scanner and printer copy adjustments. (See Replacement and Adjustment – Copy Image Adjustments.)

6.4.5 LASER SYNCHRONIZATION DETECTOR REPLACEMENT



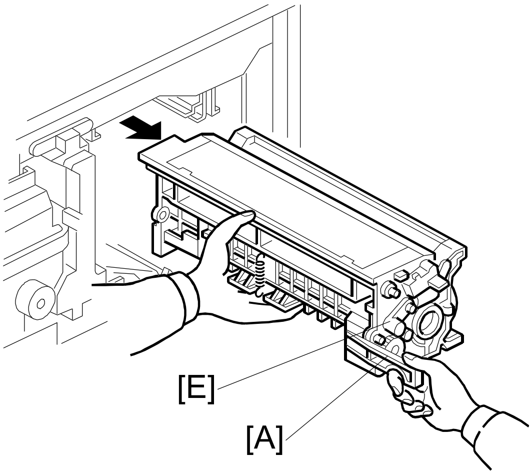
A229R502.WMF

1. Turn off the main power switch and unplug the machine.
2. Remove the drum unit. (See Drum Unit Removal.)
3. Remove the laser synchronization detector securing plate [A] using a small screwdriver (1 screw).
4. Replace the laser synchronization detector [B] (1 connector).

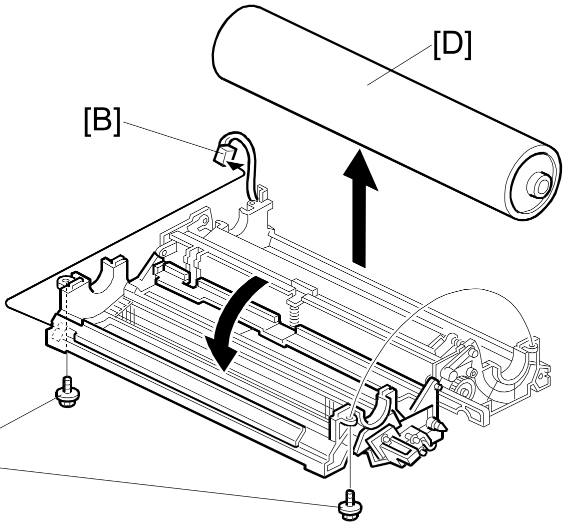
NOTE: When reinstalling the securing plate, make sure to screw it in only after a clicking sound is heard, which informs that it is installed in the correct position.

6.5 DRUM UNIT

6.5.1 DRUM UNIT REMOVAL AND DRUM REPLACEMENT



A229R550.WMF

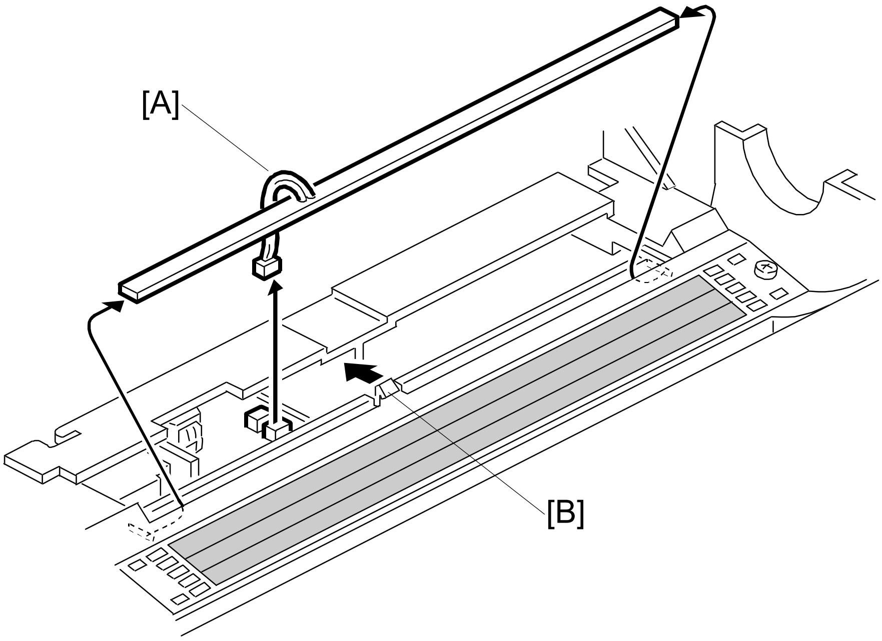


A229R551.WMF

1. Take out the development unit. (Refer to Development Unit Removal.)
2. Lower the transfer belt unit.
3. Take out the drum unit by holding the knob [A].
   NOTE: 1) Cover the drum unit with a sheet of paper to protect it from light when the drum unit is left outside the machine for servicing.
   2) Do not touch the drum surface with bare hands.
4. Disconnect the connector of the drum potential sensor [B].
5. Open the upper drum unit (2 screws [C]).
6. Replace the drum [D]. Then remove the drum protective sheet from the new drum.
   NOTE: If it is hard to completely set the drum unit in the machine because the gear is disengaged, push in the drum unit while holding down the cleaning blade release knob [E].

After installing a new drum, do the following SP modes: 2-001-1 (charge corona voltage – reset to the defaults), then 2-962 (process control initialization).

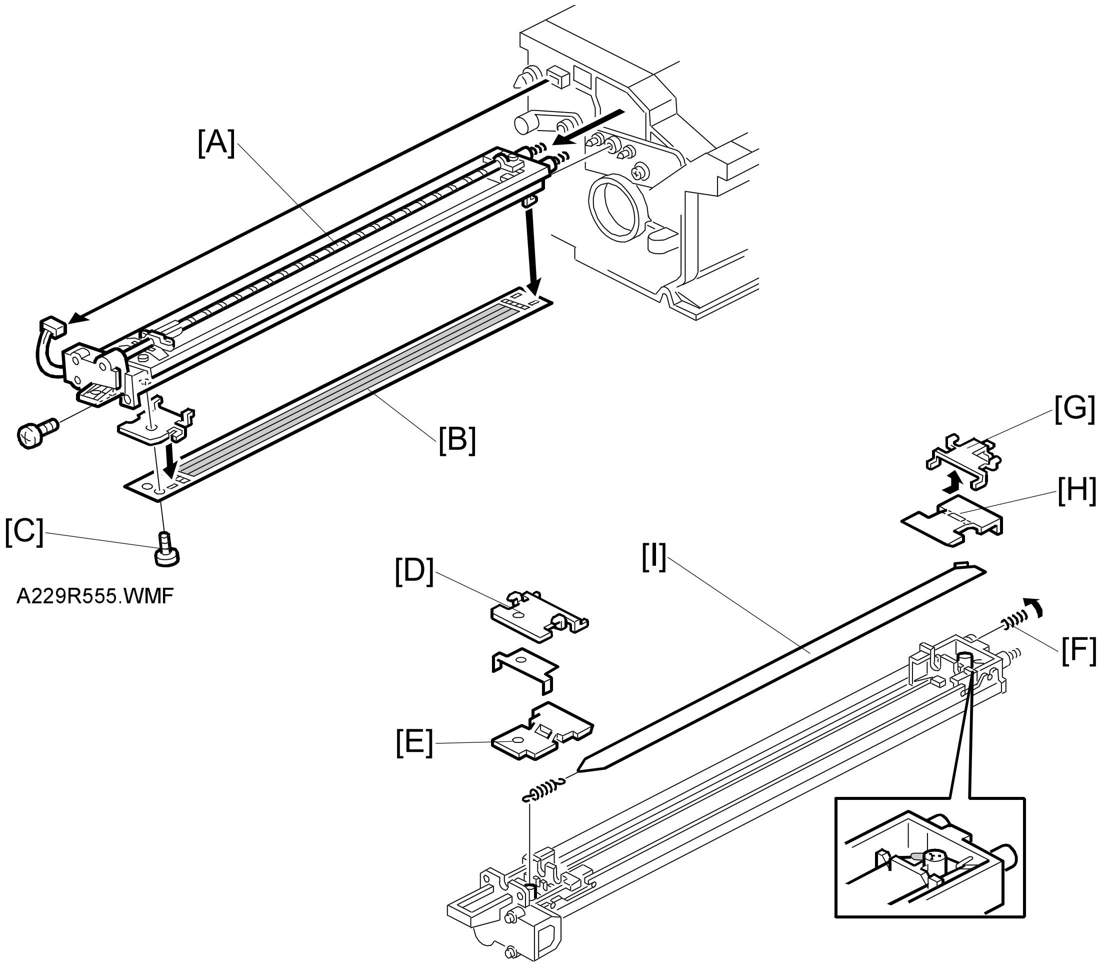
6.5.2 QUENCHING LAMP REPLACEMENT



A229R552.WMF

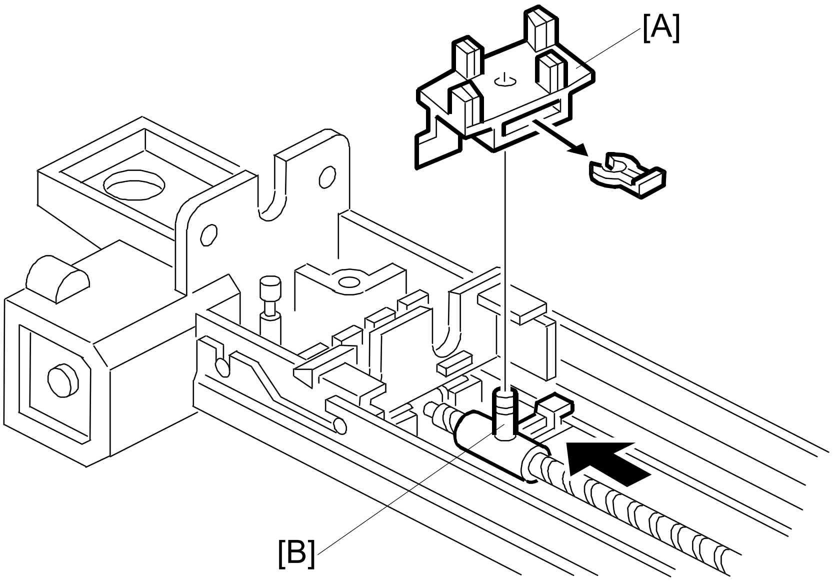
1. Remove the drum. (Refer to Drum Unit Removal and Drum Replacement.)
   NOTE: Wrap a protective sheet or a few sheets of paper around the drum to protect it from light.
2. Slightly pull up the quenching lamp cable [A], then release the hook [B] at the center of the quenching lamp.
   NOTE: Do not pull the wire too strongly.
3. Disconnect the connector [A].
4. Replace the quenching lamp.

6.5.3 GRID PLATE/CHARGE CORONA WIRE/WIRE CLEANER REPLACEMENT



A229R556.WMF

1. Take out the charge corona unit [A] (1 screw, 1 connector).
2. Remove the grid plate [B] (1 plastic screw, 4 hooks).
   NOTE: When installing the grid plate, do not tighten the plastic screw [C] too strongly.
3. Remove the front grid terminal [D], then the front end block cover [E].
4. Remove the terminal spring [F].
5. Slide the rear grid terminal [G] to the rear and remove it, then remove the rear end block cover [H].
6. Remove the charge corona wire [I].

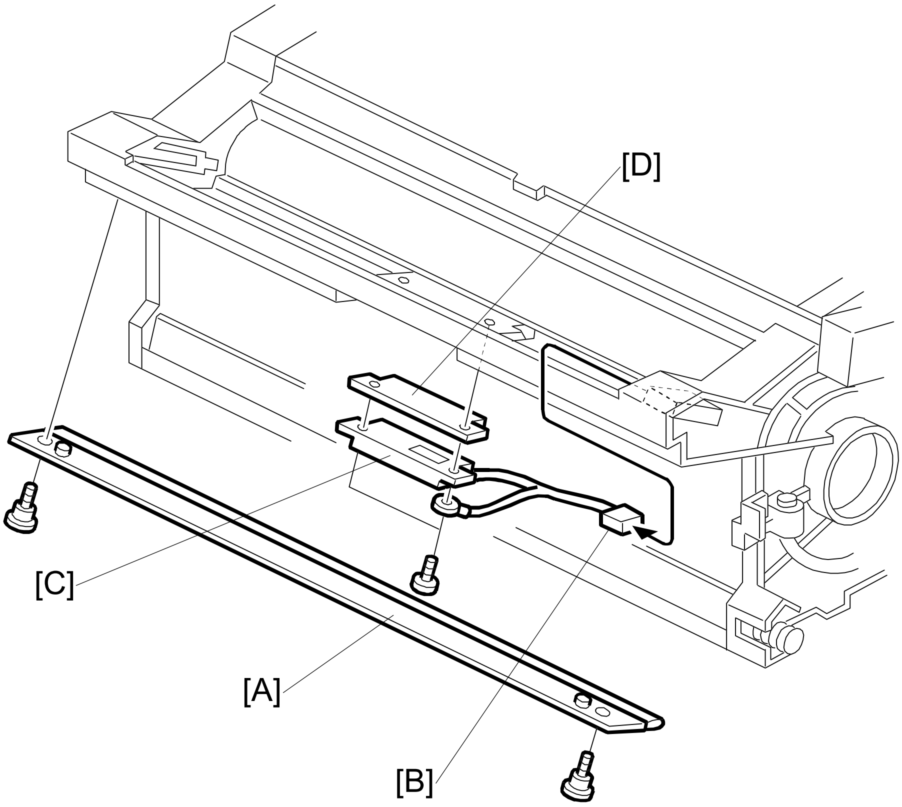


A229R553.WMF

7. Remove the wire cleaner [A] (1 snap ring).
8. Install the wire cleaner and the charge corona wire.
   NOTE: Locate the joint part [B] of the wire in the rear end block as shown.

After installing new wires, reset SP 2-001-1 and 2-001-4 (corona voltages) to the defaults. Then do SP 2-962 (process control initialization).

6.5.4 DRUM ENTRANCE SEAL AND DRUM POTENTIAL SENSOR REPLACEMENT



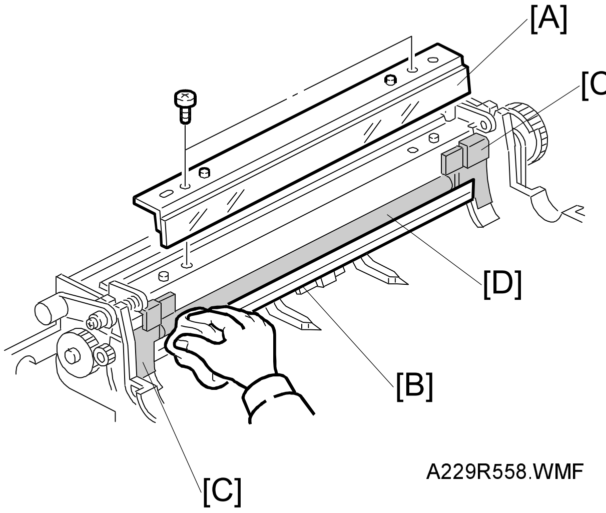
A229R557.WMF

1. Take out the drum unit. (Refer to Drum Unit Removal.)
2. Remove the drum entrance seal [A].
3. Disconnect the connector [B].
   NOTE: Before removing the drum potential sensor, put a few sheets of paper between the sensor and the drum to protect the drum surface.
4. Remove the drum potential sensor [C] and the grounding plate [D] (2 screws).
5. Replace the drum potential sensor [C].

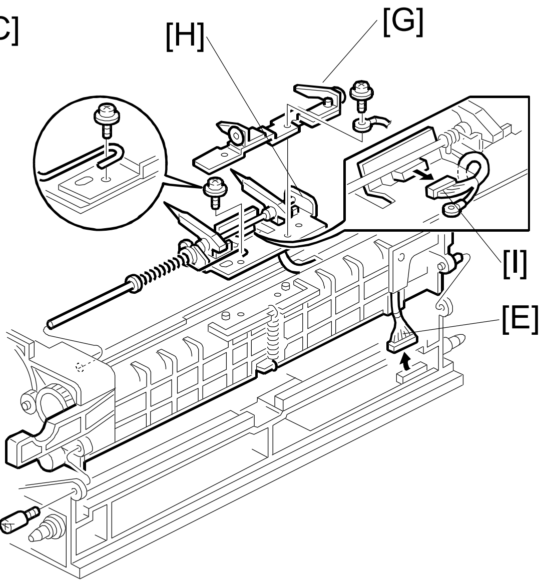
⚠CAUTION

After replacing the drum potential sensor, perform the process control data initial setting (SP mode No. 2-962).

6.5.5 CLEANING BLADE REPLACEMENT



A229R558.WMF



A229R559.WMF

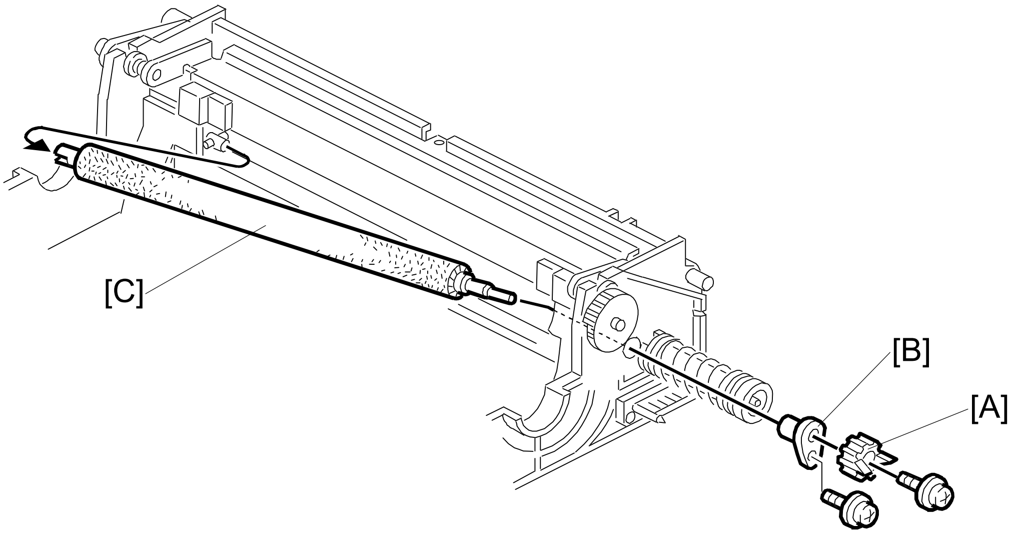
1. Remove the drum. (Refer to Drum Unit Removal and Drum Replacement.)
2. Remove the cleaning blade [A] (2 screws).
3. Clean the entrance seal [B], side seals [C] and cleaning brush [D].

   NOTE: When a vacuum cleaner is used, to protect the electrical parts from static electricity, disconnect the connector on the charge power pack and remove the ID sensor as follows:
   1) Disconnect the 12P connector on the charge power pack [E].
   2) Remove the screw [F] and separate the upper and lower drum units.
   3) Remove the spur bracket [G] and pick-off pawl bracket [H] (2 screws).
   4) Disconnect the connector [I].
   5) Slide the pick-off pawl bracket to the rear, while turning it counterclockwise (as seen from the front),.

4. Install the new cleaning blade.

   NOTE: Do not clean the edge of the cleaning blade with a cloth; this damages the edge and causes black lines on copies.
   Do not touch the edge of the new cleaning blade. If some setting powder or toner on the blade edge is removed, apply toner at that place.
   When installing the cleaning blade, do not pinch the side seals.

6.5.6 CLEANING BRUSH REPLACEMENT

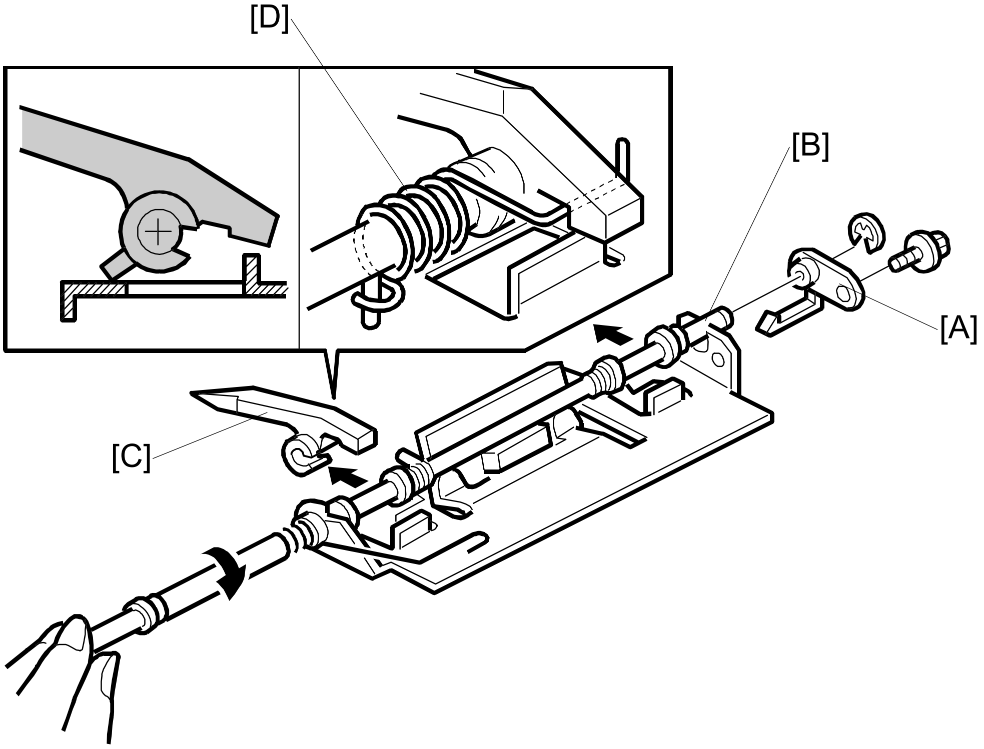


A229R560.WMF

1. Remove the cleaning blade. (Refer to Cleaning Blade Replacement.)
2. Remove the coupling gear [A] (1 screw).
3. Remove the bushing [B] (1 screw).
4. Pull the cleaning brush shaft to the rear to release the cleaning brush [C], then remove the cleaning brush.

NOTE: Do not touch the cleaning brush with bare hands.
After replacement, clean the ID sensor surface. Then do SP 3-001-2 to initialize the sensor.

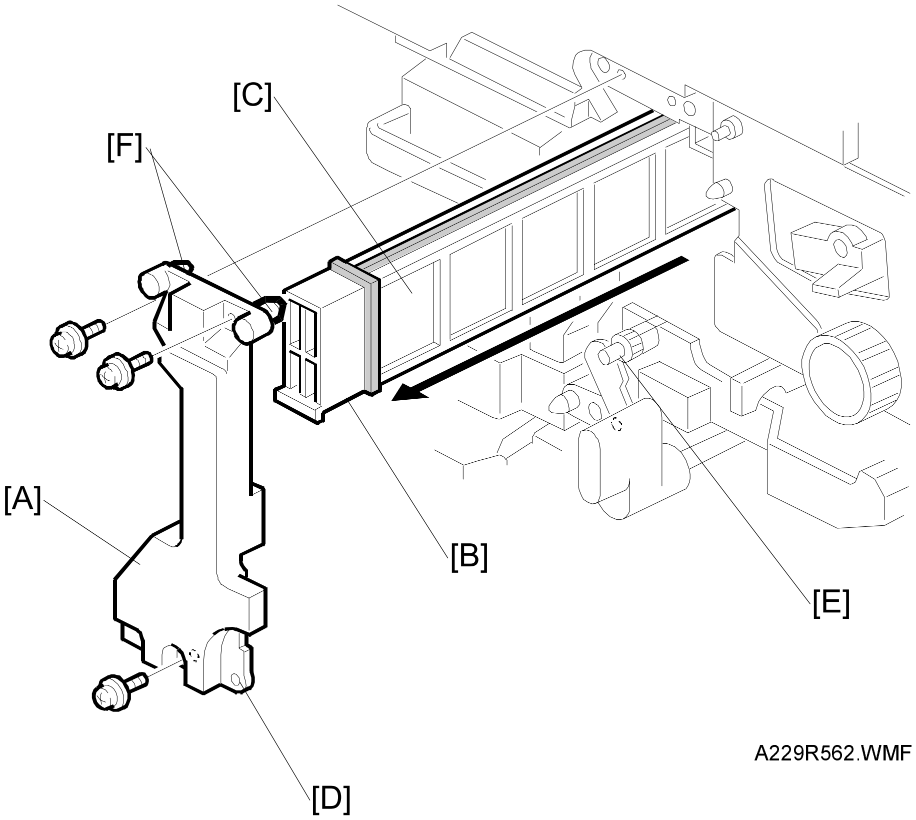
6.5.7 PICK-OFF PAWL REPLACEMENT



A229R561.WMF

1. Take out the pick-off pawl unit. (Refer to Cleaning Blade Replacement.)
2. Remove the bushing [A] (1 screw and 1 retaining ring).
3. While pulling the shaft [B] to the rear, turn the pick-off pawl about 45 degrees clockwise (as viewed from the front) in order to move up the pick-off pawl.
4. Replace the pick-off pawl [C].
   NOTE: Do not forget to hook the tension spring [D].
   After replacement, check that the pick-off pawl moves smoothly.

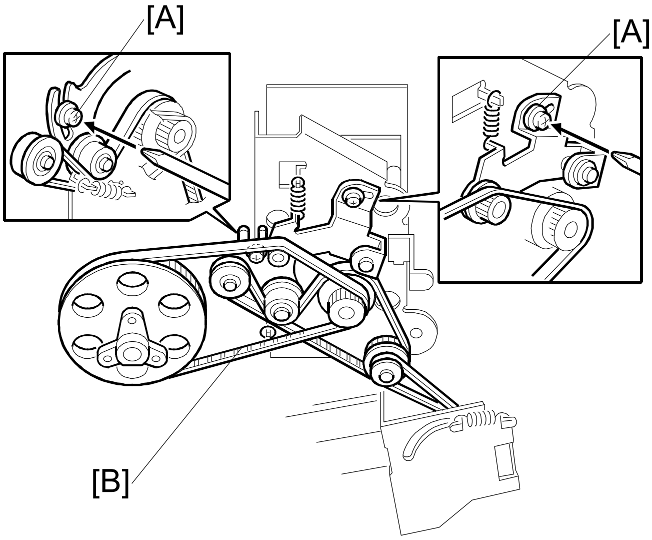
6.5.8 OZONE FILTER REPLACEMENT



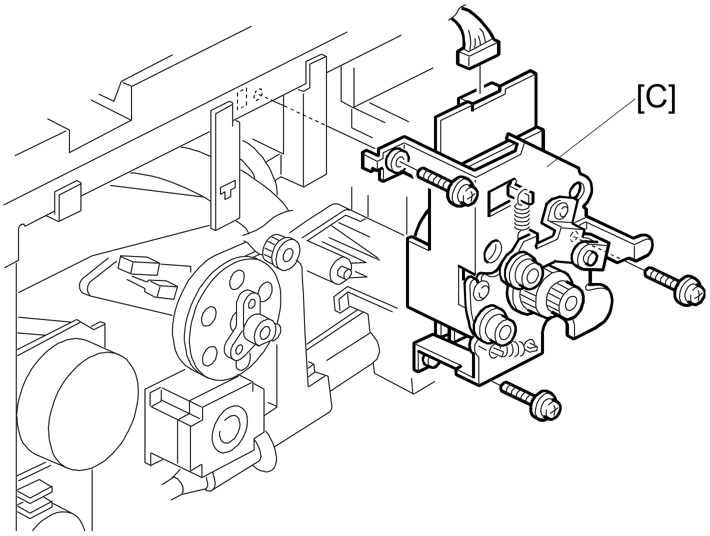
1. Open the front doors and open the toner bottle holder.
2. Remove the transfer belt unit prop [A] (3 screws).
3. Remove the ozone filter unit [B].
4. Replace the ozone filter [C].

NOTE: To attach the transfer belt unit prop easily, set the following in order: lower pins [D], drive roller shaft [E], upper pins [F].

6.5.9 DRUM MOTOR REPLACEMENT



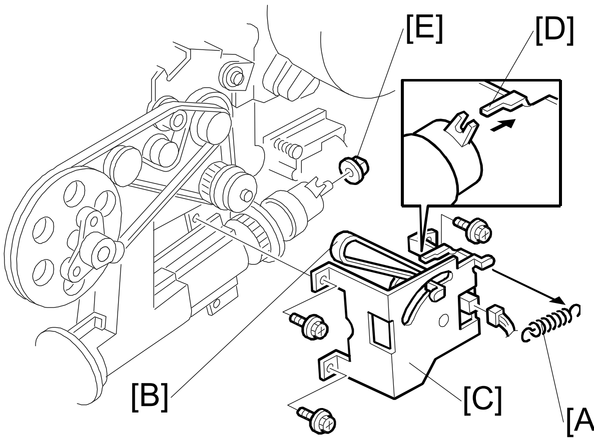
A229R563.WMF



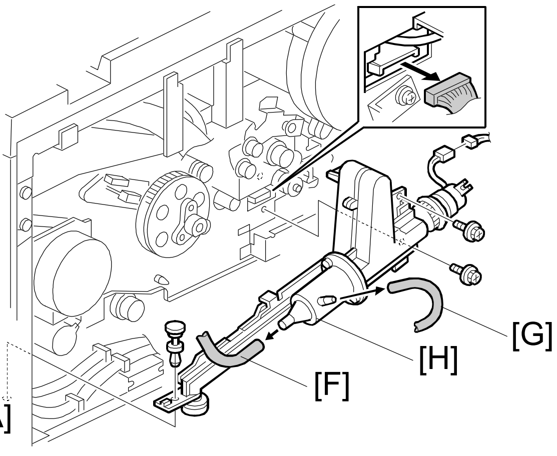
A229R564.WMF

1. Turn off the main switch.
2. Remove the rear cover and the fly wheel. (Refer to Development Motor Replacement.)
3. Loosen the tension brackets [A] (2 screws).
4. Remove the timing belts [B] from the drum motor’s pulleys.
5. Replace the drum motor unit [C] (3 screws, 1 connector).

6.5.10 TONEER OUTPUT AND RECYCLING PUMP UNIT REPLACEMENT



A229R565.WMF

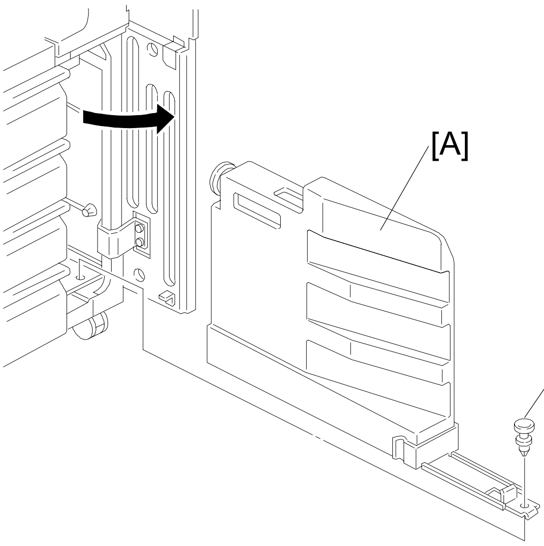


A229R567.WMF

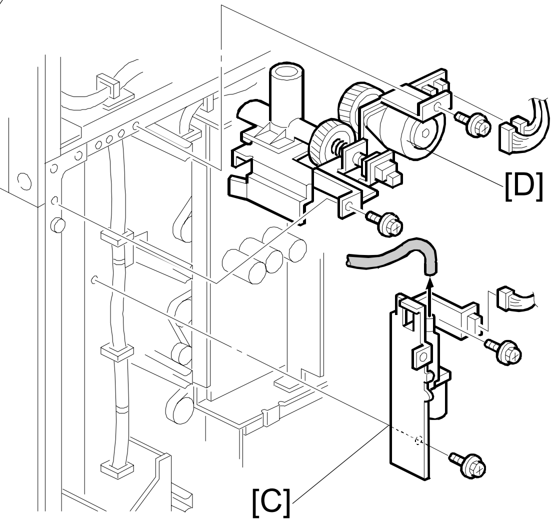
NOTE: Before starting the procedure, remove the drum unit and the transfer belt unit to prevent toner from dropping into the machine.

1. Turn off the main switch.
2. Remove the rear cover and fly wheel. (Refer to Development Motor Replacement.)
3. Lower the I/O Board (4 screws).
4. Remove the spring [A].
5. Remove the toner recycling clutch bracket [C] (3 screws, 1 connector)
   NOTE: When reinstalling the bracket [C], put the pin on the stopper [D] into the cutout in the clutch.
6. Remove the timing belt [B] from the drum motor's pulley.
7. Remove the bushing [E].
   NOTE: Be careful not to drop the bushing.
8. Remove the by-pass feed motor. (Refer to By-pass Feed Motor/Clutch Replacement.)
9. Release the toner recycling tube [F] from the pump unit.
   NOTE: When turning the end of the tube downwards, prevent the toner in it from dropping into the machine.
10. Release the air tube [G].
11. Remove the toner output and recycling pump unit [H] (2 screws, 1 pin connectors).
    NOTE: The lower part of the pin (push lock) drops easily.

6.5.11 AIR PUMP AND TONER COLLECTION MOTOR REPLACEMENT



A229R568.WMF

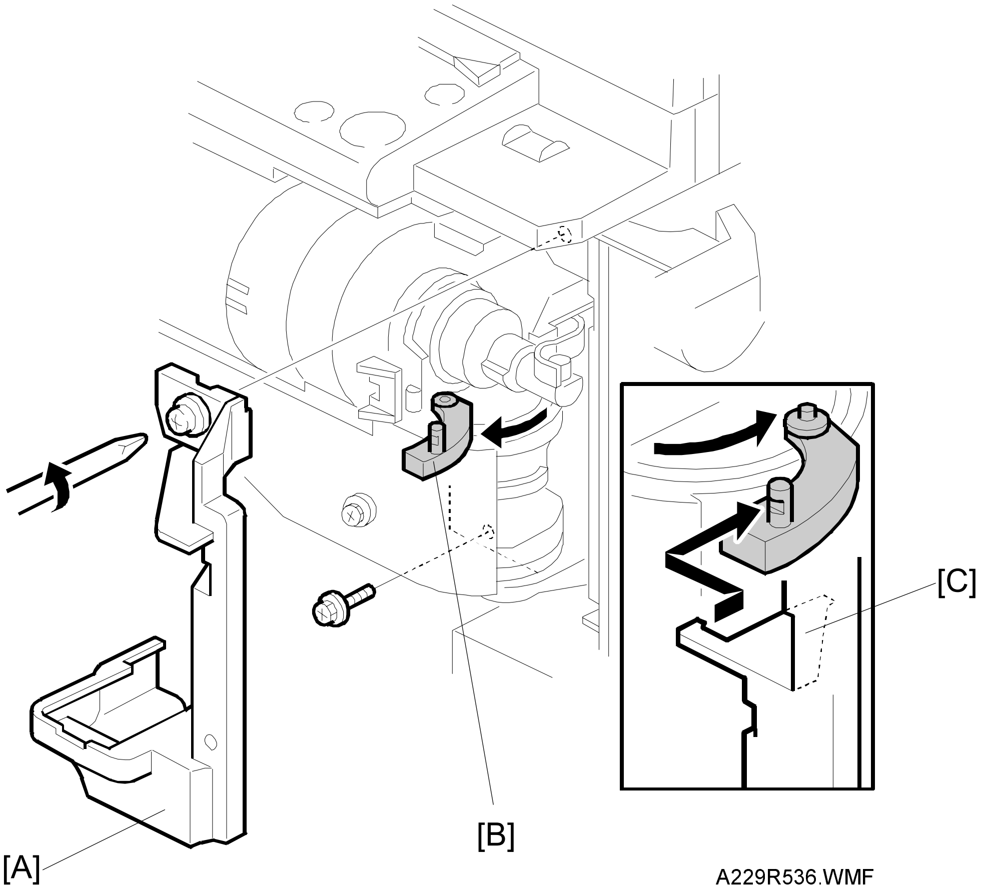


A229R569.WMF

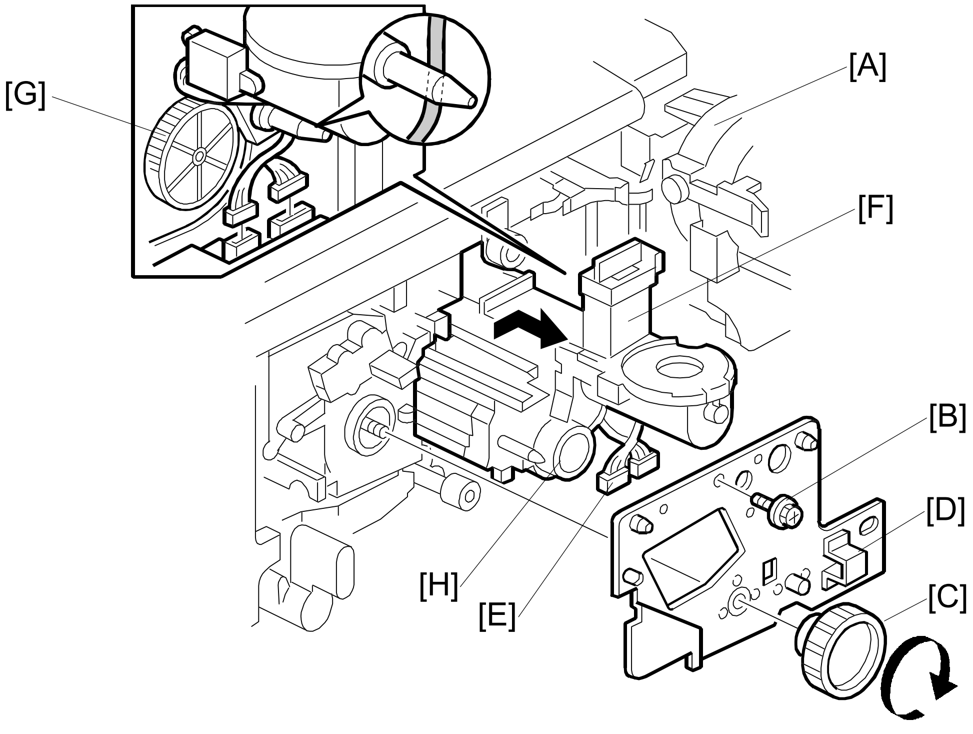
1. Open the front doors then remove the toner collection bottle [A] (1 push-lock [B]).
2. Remove the upper and lower rear covers. (Refer to Upper and Lower Rear Cover Removal.)
3. Remove the paper feed unit control board. (Refer to Paper Feed Control Board Removal)
4. Remove the air pump unit [C] (1 tube, 1 connector and 2 screws).
5. Remove the toner collection motor [D] (2 connectors, 2 screws).
   NOTE: When re-installing the toner collection motor, be sure to put the 2 positioning pins in the holes in the machine rear frame.

6.6 DEVELOPMENT AND TONER SUPPLY

6.6.1 DEVELOPMENT UNIT REMOVAL



1. Turn off the main switch.
2. Open the front doors.
3. Remove the shutter inner cover [A].
4. Release the shutter lever [B] (fully to the front).
   NOTE: When attaching the shutter inner cover [A], hang the shutter lever [B] on the hook [C].

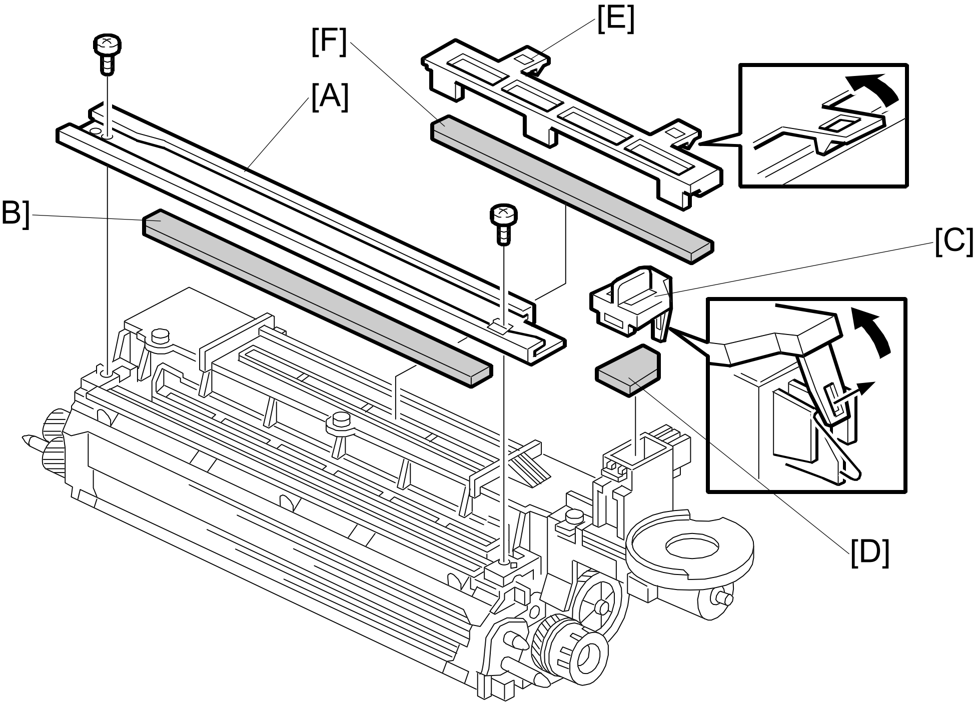


A229R537.WMF

5. Open the toner bottle holder [A].
6. Remove the screw [B] that holds the drum stay.
7. Remove the drum stay knob [C] then take out the drum stay [D].
8. Disconnect the two connectors [E].
9. Pull out the development unit [F].

NOTE: 1) To prevent scratches on the drum, push the development unit to the right while pulling it out.
2) When installing the development unit, do not forget to connect the two connectors [E].
3) When installing the drum stay, be careful not to pinch the cables. Also, keep the cables away from the gears [G].
4) When pulling out the development unit, do not hold the knob [H].
5) Keep the development unit connector as far as possible away from the development unit when cleaning the unit with a vacuum cleaner.
6) Do not touch the pins of the development unit connector when carrying the development unit away from the main frame or cleaning it.

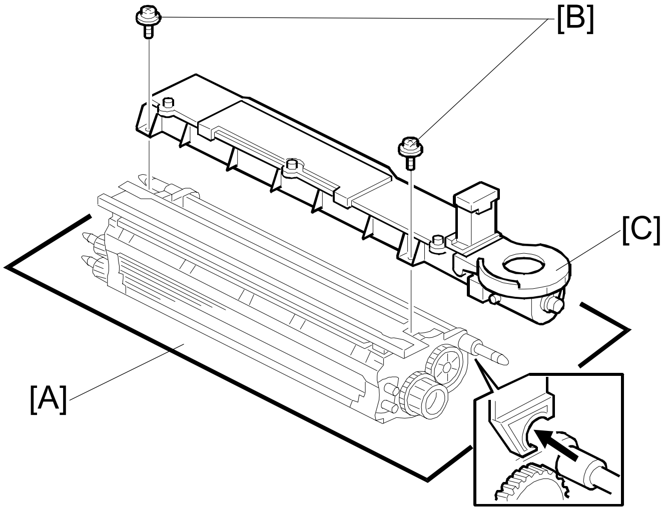
6.6.2 DEVELOPMENT AND AIR DUST FILTER REPLACEMENT



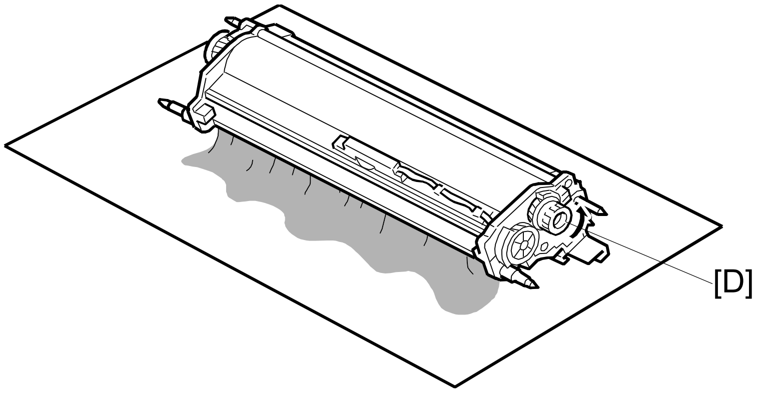
A229R540.WMF

1. Take out the development unit. (Refer to Development Unit Removal.)
2. Remove the development guide rail [A] (two screws).
3. Replace the development filter [B].
4. Remove the front air dust filter cover [C] (1 hook).
5. Replace the front air dust filter [D].
6. Remove the central air dust filter cover [E].
7. Replace the central air dust filter [F].

6.6.3 DEVELOPER REPLACEMENT

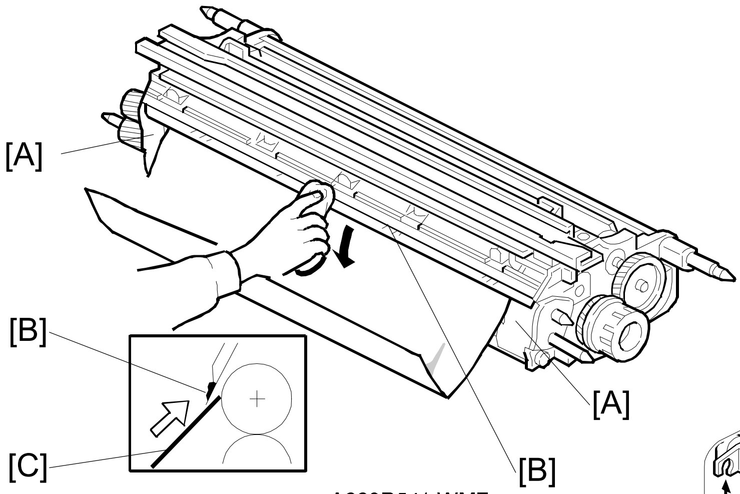


A229R574.WMF

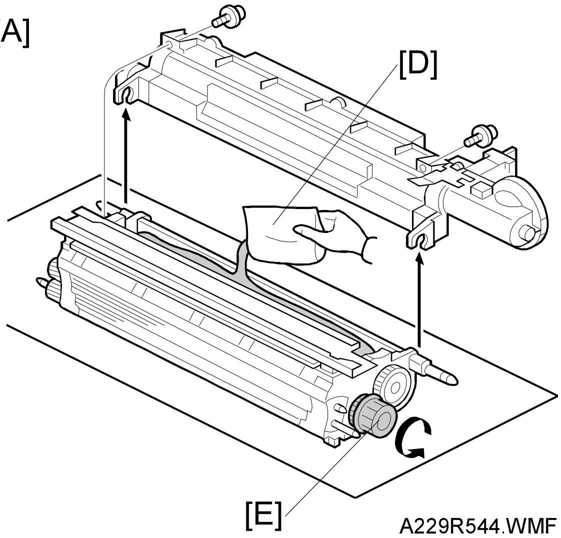


A229R542.WMF

1. Take out the development unit. (Refer to Development Unit Removal.)
2. Place the development unit on a sheet of paper [A].
3. Remove the two screws [B] that hold the toner hopper [C].
4. Remove the toner hopper from the development unit.
5. Turn over the development unit then turn the paddle roller knob [D] to empty the remaining developer onto the sheet. (The one-way clutch in the knob [D] allows the paddle roller to be turned counterclockwise only.)
   NOTE: Dispose of used developer in accordance with local regulations.
   Make sure that no developer remains on the development rollers or in the development unit.



A229R541.WMF

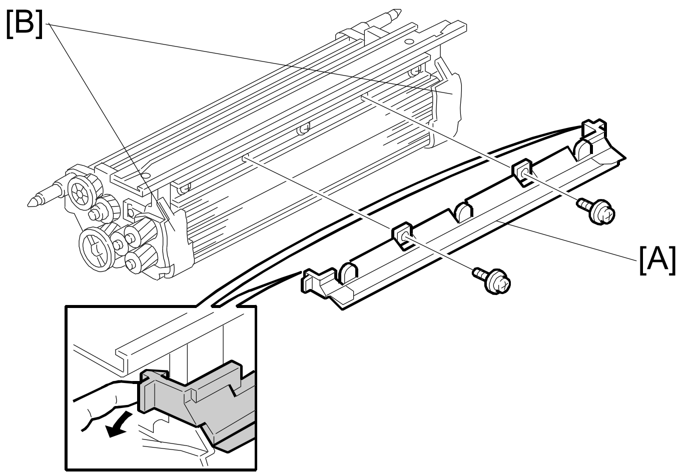


A229R544.WMF

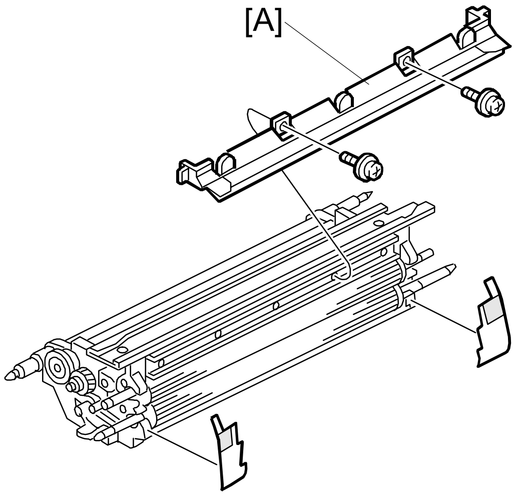
6. Clean the side seals [A] and entrance seal [B].
   NOTE: Cover the sleeve rollers with a sheet of paper [C] to prevent the used developer from being attracted to the sleeve rollers.
7. Pour in one pack of developer [D] evenly across the width of the development unit, while turning the knob [E].
8. Re-install the toner hopper, then re-assemble the machine.
   NOTE: 1) Be sure to connect the connectors after installing the development unit in the machine.
   2) Tilt the toner hopper so that there is toner near the toner end sensor.
9. Turn on the main switch, then perform developer initial setting (SP mode No. 2-801).

NOTE: 1) Do not make any copies with the new developer before completing the developer initial setting, otherwise toner density control will be abnormal.
2) When the developer initial setting did not complete correctly, you cannot exit the SP mode by pressing the "Quit" key. If this problem occurs, turn the main switch off and on, then perform the initial setting again. If the result is the same, see "SC390" in the troubleshooting section.

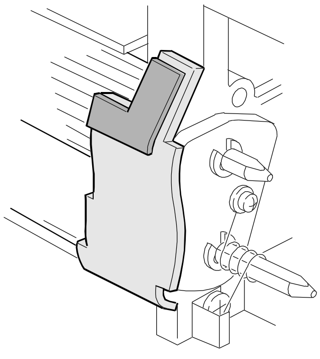
6.6.4 DEVELOPMENT ENTRANCE, FRONT, AND REAR SIDE SEALS



A229R545.WMF



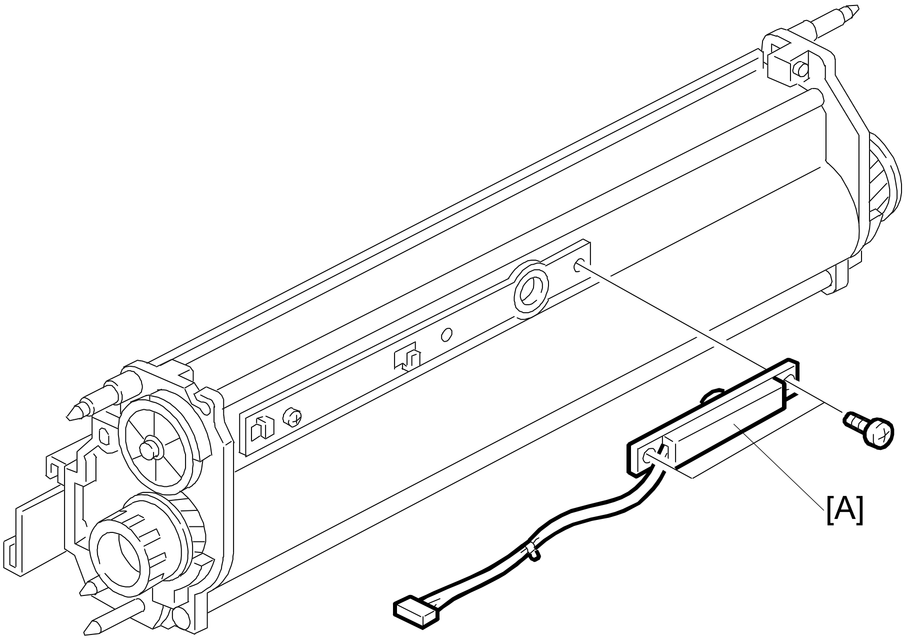
A229R571.WMF



A229R546.WMF

1. Remove the developer. (Refer to Developer Replacement.)
2. Replace the developer entrance seal [A] (2 screws, 2 hooks).
3. Replace the front and rear side seals [B].
   NOTE: When re-assembling the development unit, use new side seals and align the edges of the side seals with the corner [C] and the edge [D] as shown.
   There is no need to change the developer with this procedure.

6.6.5 TONER DENSITY SENSOR REPLACEMENT

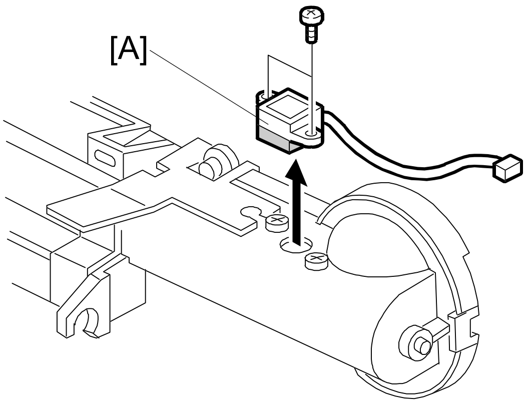


A229R547.WMF

1. Remove the developer. (Refer to Developer Replacement.)
2. Replace the TD sensor [A] (2 screws).
   NOTE: Before installing the TD sensor, clean the development unit well so that no carrier particles remain in the gap between the TD sensor and the development unit casing.
3. Install the new developer and
4. Perform the developer initial setting (SP2-801) then process control initialization (SP 2-962).

NOTE: Do not make any copies before completing the developer initial setting (SP 2-801).

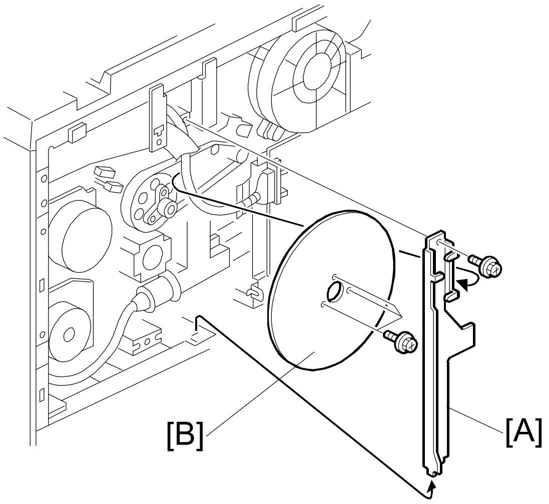
6.6.6 TONER END SENSOR REPLACEMENT



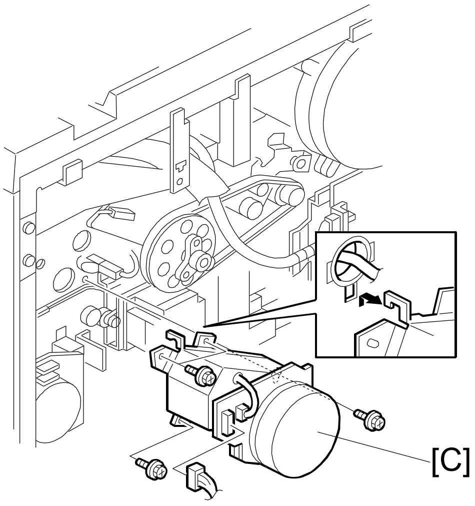
A229R548.WMF

1. Take out the toner hopper. (Refer to Developer Replacement.)
2. Replace the toner end sensor [A].

6.6.7 DEVELOPMENT MOTOR REPLACEMENT



A229R570.WMF

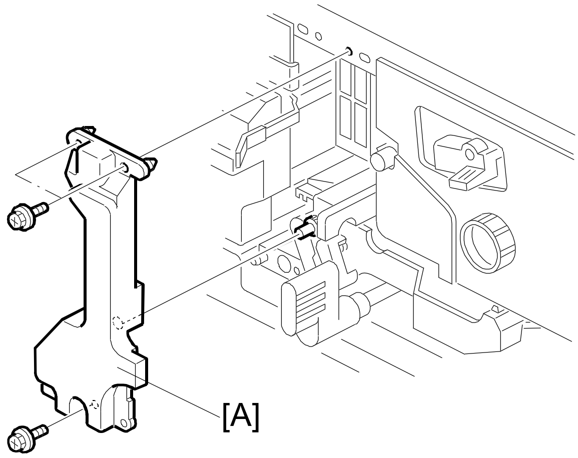


A229R549.WMF

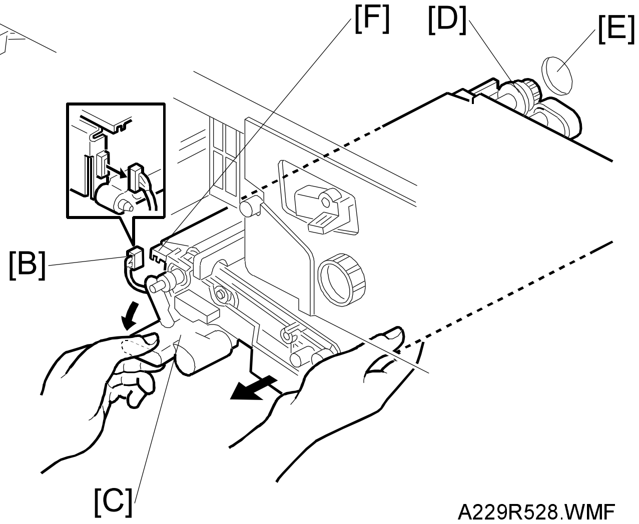
1. Turn off the main switch.
2. Remove the rear covers. (Refer to Exterior Cover Removal.)
3. Remove the harness-guide bracket [A] (1 screw).
4. Remove the fly wheel [B] (3 screws).
5. Replace the development motor unit [C] (3 screws, 1 connector, and 1 hook).

6.7 TRANSFER BELT UNIT

6.7.1 TRANSFER BELT UNIT REMOVAL/INSTALLATION



A229R527.WMF



A229R528.WMF

- Removal -

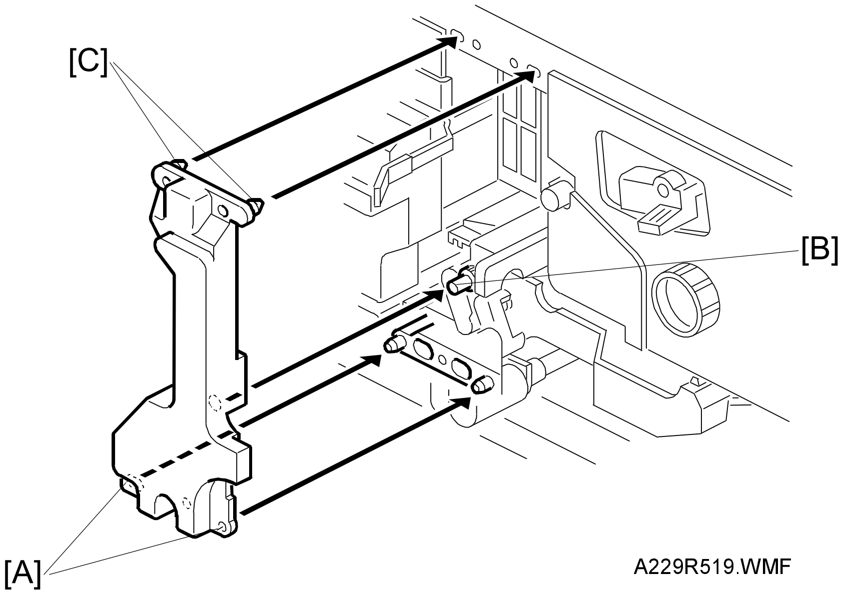
1. Turn off the main switch.
2. Remove the transfer belt unit prop [A] (3 screws).
3. Disconnect the connector [B].
4. While turning the lever [C] counterclockwise, take out the transfer belt unit.

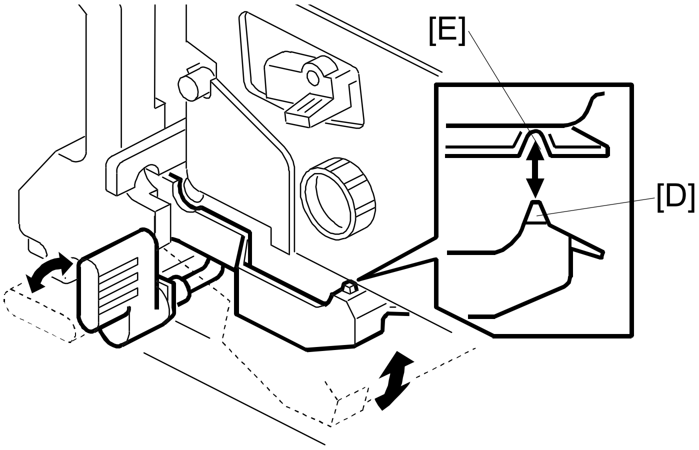
   NOTE: 1) Do not touch the transfer belt with bare hands.
   2) Take care not to scratch the drum with the transfer belt unit. Be careful when installing the transfer belt unit.

- Installation -

1. While turning the lever [C] counterclockwise, install the transfer belt unit.

   NOTE: 1) Insert the gear [D] into the opening [E] in the rear frame.
   2) Place the slot [F] in the transfer belt unit on the rail.

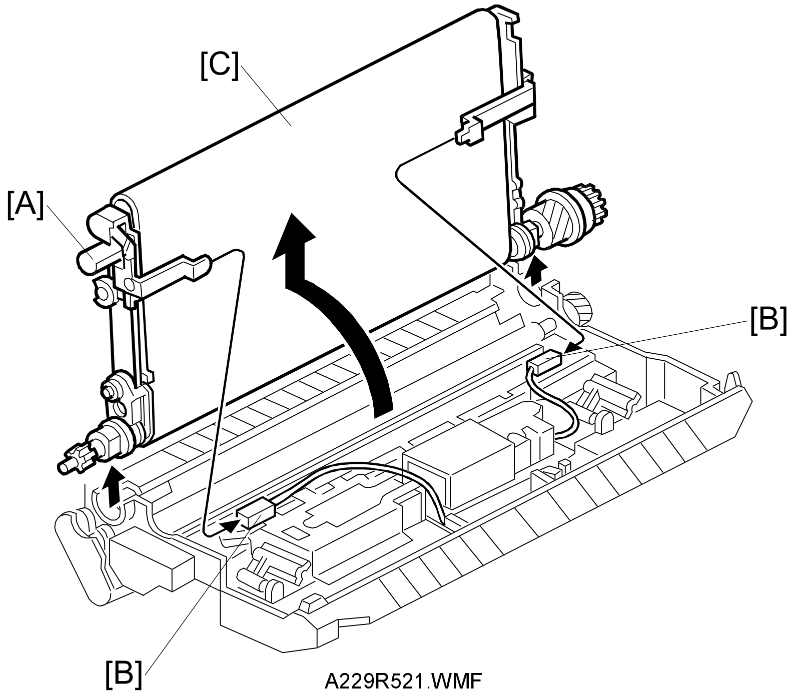




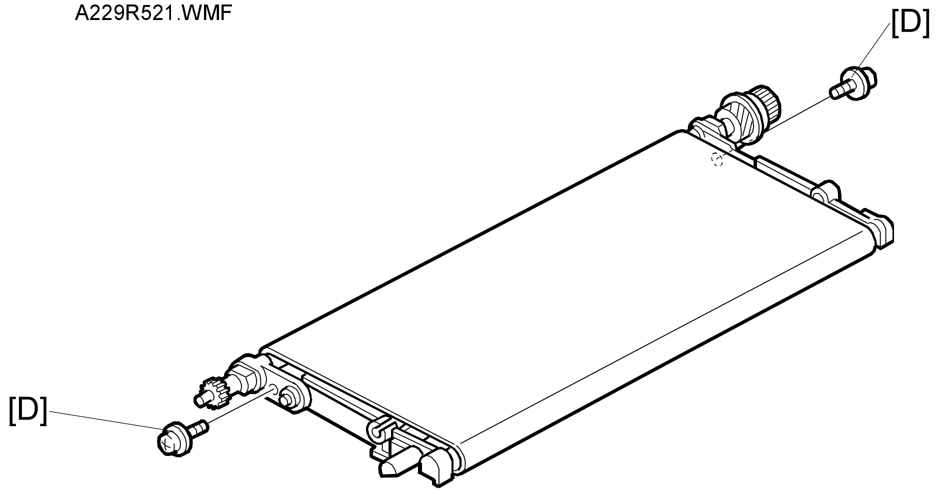
A229R520.WMF

2. Attach the transfer belt unit prop (3 screws).
   NOTE: To attach the transfer belt unit prop easily, set the following in order: lower pins [A], drive roller shaft [B], upper pins [C].
3. After installation, check the following points:
   1) The transfer belt unit must move up and down smoothly
   2) Part [D] of the transfer belt unit must be behind the drum stay,
   3) Part [D] of the transfer belt unit must be set in the indent [E] in the drum unit casing.

6.7.2 TRANSFER BELT REPLACEMENT

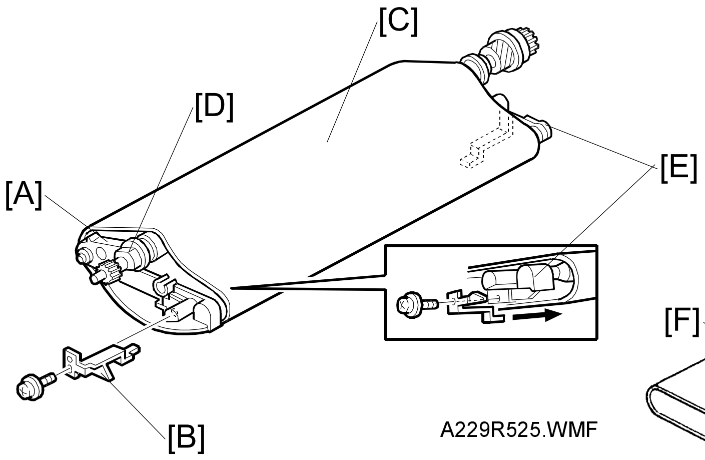


A229R521.WMF

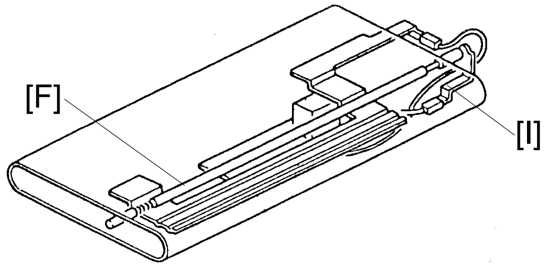


A229R522.WMF

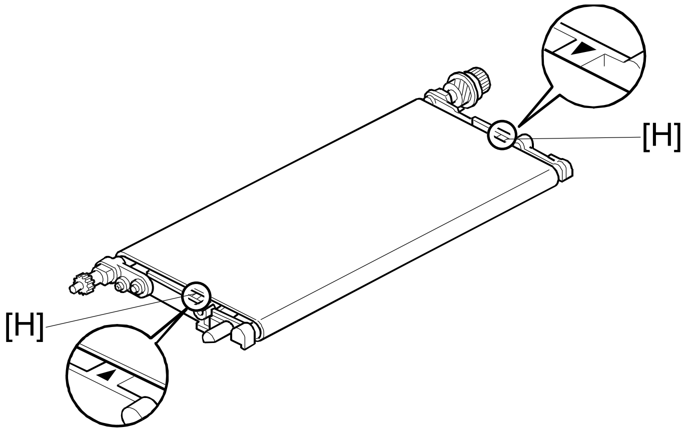
1. Take out the transfer belt unit. (Refer to Transfer Belt Unit Removal.)
2. While raising the knob [A], disconnect the two connectors [B].
3. Turn the transfer belt upper unit [C] 90 degrees counterclockwise, then raise and remove it.
4. Remove the screws [D].



A229R525.WMF



A229R523.PCX



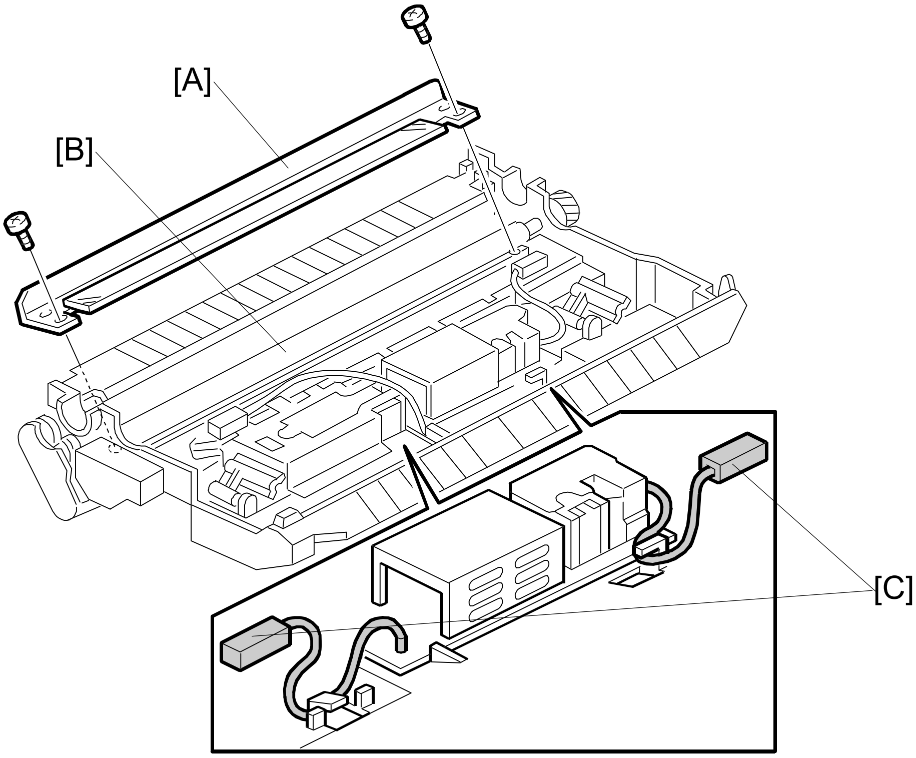
A229R524.WMF

5. Turn the belt drive roller holder [A] clockwise (front view) and remove the bias terminal [B] (1 screw).
6. Replace the transfer belt [C].

NOTE: 1) Before installing the transfer belt, clean both sides of the transfer belt with a dry cloth (do not use alcohol).
2) Before installing the transfer belt, clean the following items with alcohol.
- Belt drive roller [D]
- Belt roller [E]
- Bias roller [F]

3) Position the transfer belt at the center of the belt roller [E]. (Both marks [H] should be visible.)
4) Set the transfer belts under the bias terminals [B] and [I] (see the previous page).

6.7.3 BIAS ROLLER CLEANING BLADE REPLACEMENT

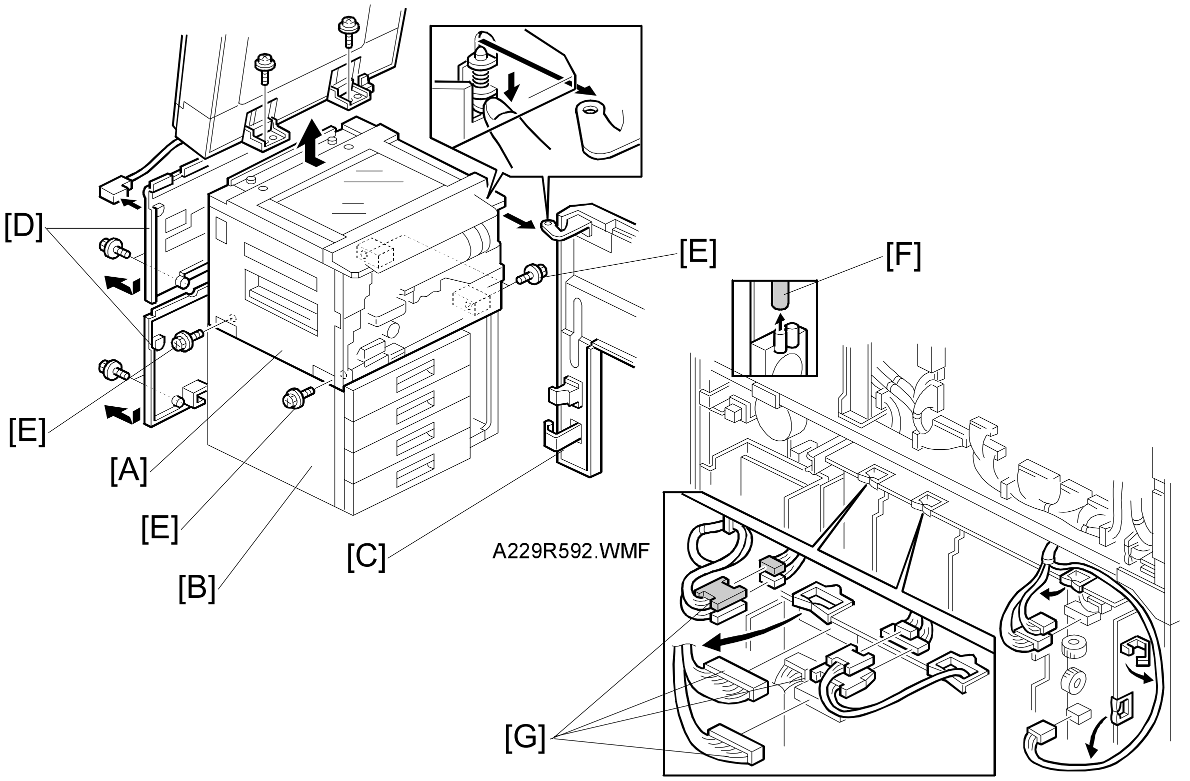


A229R526.WMF

1. Remove the transfer belt unit. (Refer to Transfer Belt Replacement.)
2. Remove the cleaning roller cleaning blade [A].
3. Clean the cleaning bias roller [B].
   NOTE: When using a vacuum cleaner, to protect the transfer power pack from static electricity, remove the power pack connectors [C].
4. Install the new cleaning blade.
   NOTE: Do not touch the edge of the cleaning blade. If some of the setting powder on the blade edge is removed, apply setting powder or toner at that place.

6.8 PAPER FEED

6.8.1 PAPER TRAY UNIT REMOVAL



A229R592.WMF

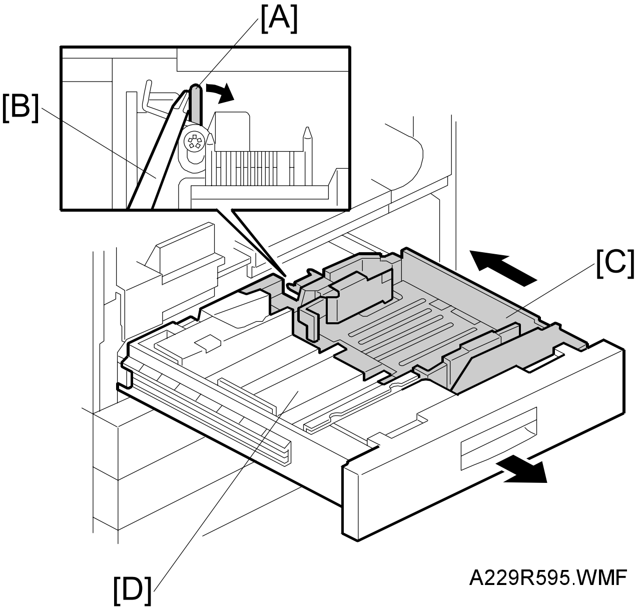
A229R593.WMF

To facilitate transportation, the upper part of the copier (copier main frame) [A] and the lower part of the copier (paper tray unit) [B] can be separated as follows:

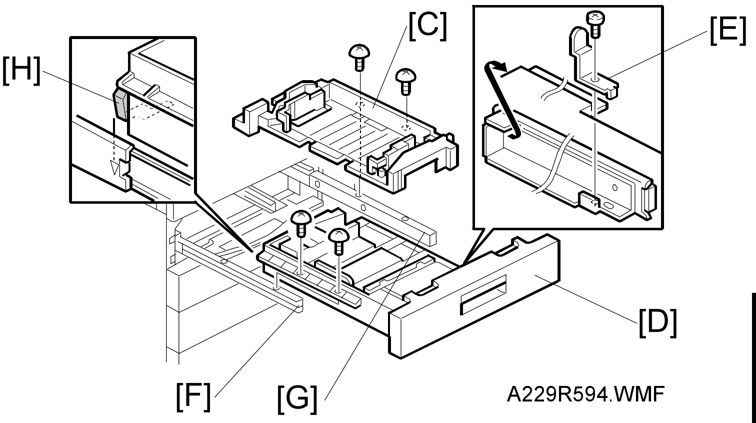
1. Turn off the main switch.
2. Remove the document feeder (2 screws, 1 connector)
3. Remove the front cover [C]. (Refer to Front Cover Removal.)
4. Remove the rear covers [D].
5. Remove the four screws [E].
6. Remove the air tube [F].
7. Disconnect the nine connectors [G].
8. Remove the copier main frame [A] from the paper tray unit [B].
   NOTE: When re-installing the copier main frame on the paper tray unit, do not pinch the cable between the copier main frame and the paper feed unit.

6.8.2 PAPER TRAY REMOVAL

Tandem Tray Removal



A229R595.WMF

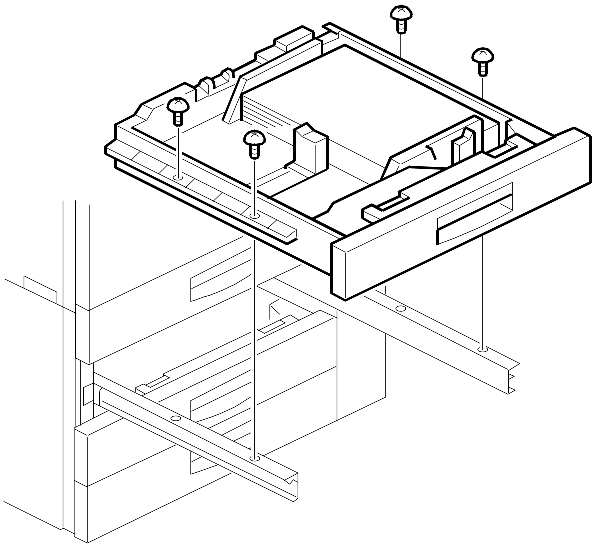


A229R594.WMF

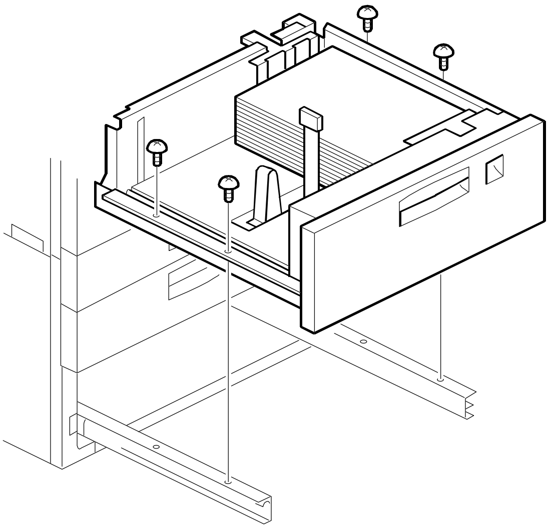
1. Open the left door and draw out the tandem tray.
2. While pushing the release lever [A] to the right with a screwdriver [B], slightly push the right tandem tray [C] to separate it from the left tandem tray [D].
3. Remove the stopper [E] (1 screw).
4. Remove the left tandem tray [D] from the left guide rail [F] (2 screws).
5. While holding the right tandem tray [C] from the bottom, remove the right tandem tray from the right guide rail [G] (2 screws).

NOTE: 1) If the two screws are removed without holding the right tandem tray, the tray will drop out.
2) Be careful not to deform the grounding plate [H] when reinstalling the left tandem tray.

Universal Tray/Built-in LCT Removal



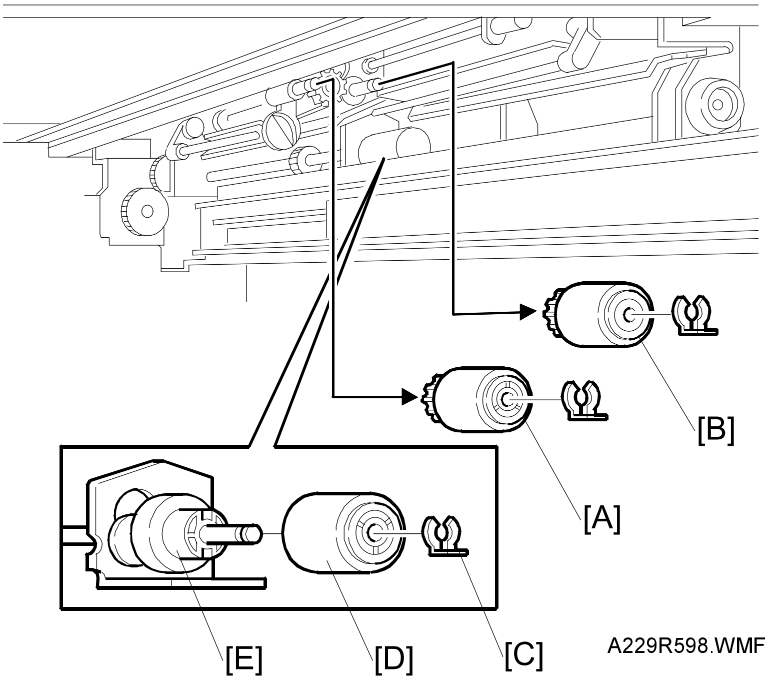
A229R596.WMF



A229R597.WMF

1. Draw out the tray.
2. Remove the tray from both guide rails as shown (4 screws).

6.8.3 PAPER FEED ROLLER REPLACEMENT

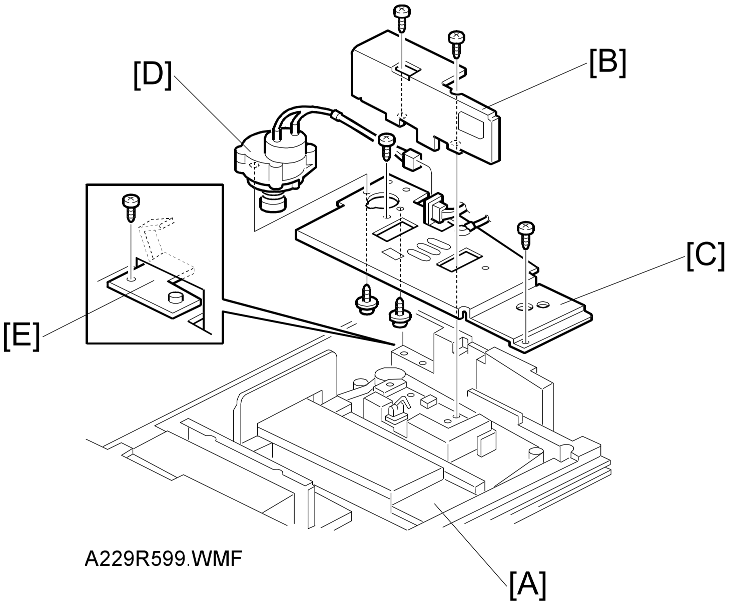


1. Turn off the main switch.
2. Remove the paper tray which the feed rollers need replacing for. (Refer to Paper Tray Removal.)
3. Remove the pick-up roller [A] (1 snap ring).
4. Remove the feed roller [B] (1 snap ring).
5. Remove the snap ring [C] for the separation roller [D], then separate the separation roller [D] from the torque limiter [E].
6. After installing new rollers, reset the copy counter for the paper tray (SP 7-816).

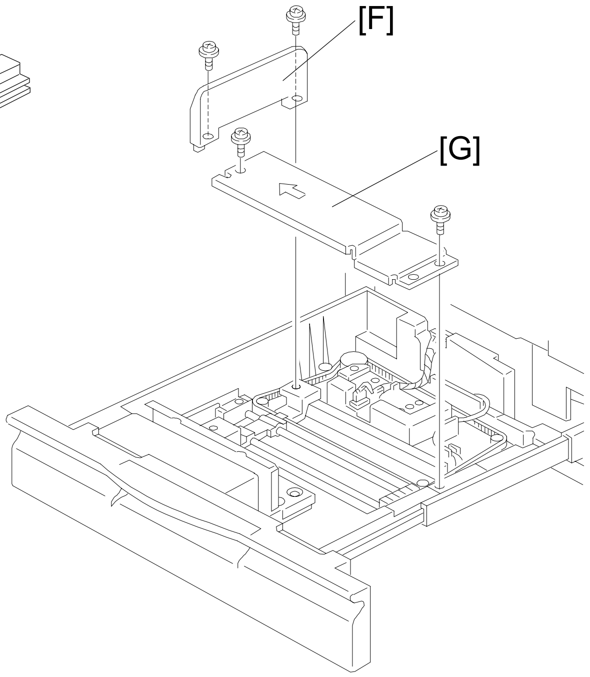
NOTE: 1) The paper feed (pick-up, feed, separation) rollers used in the 1st ~ 3rd feed units in the paper tray unit are different from the feed rollers used in the by-pass feed table and 3.5 k LCT.

2) Do not touch the surface of the rollers with bare hands.

6.8.4 TANDEM REAR FENCE DRIVE BELT REMOVAL

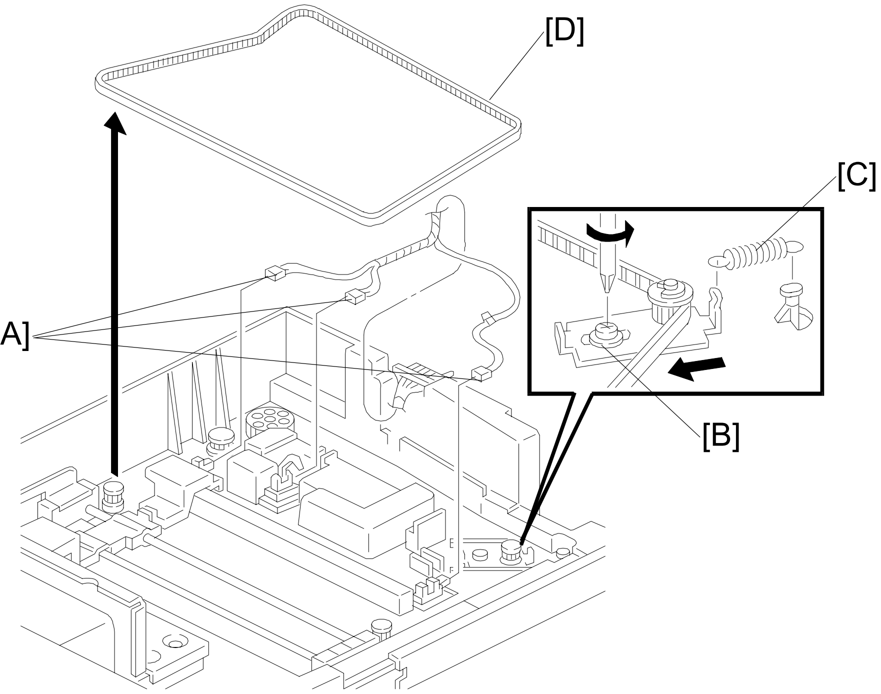


A229R599.WMF



A229R600.WMF

1. Draw out the tandem tray.
2. Separate the right tandem tray from the left tandem tray [A]. (Refer to Tandem Tray Removal.)
3. Remove the rear fence [B] on the left tandem tray (2 screws).
4. Remove the rear base plate [C] with the rear fence drive motor [D]
   (3 screws, 1 connector, 1 grounding screw, and 1 grounding plate [E]).
5. Remove the end fence [F] (2 screws).
6. Remove the center bottom plate [G] (2 screws).

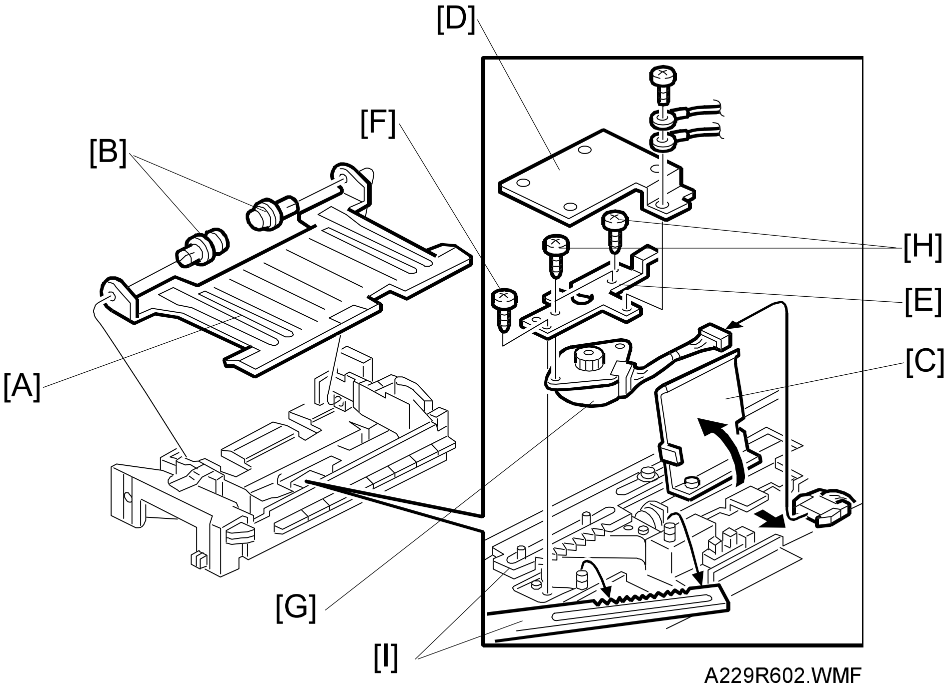


A229R601.WMF

7. Disconnect the three connectors [A].
8. Loosen the screw [B] and unhook the spring [C].
9. Remove the timing belt [D].

NOTE: When installing the timing belt, hook the spring [C] first, then tighten the screw [B].

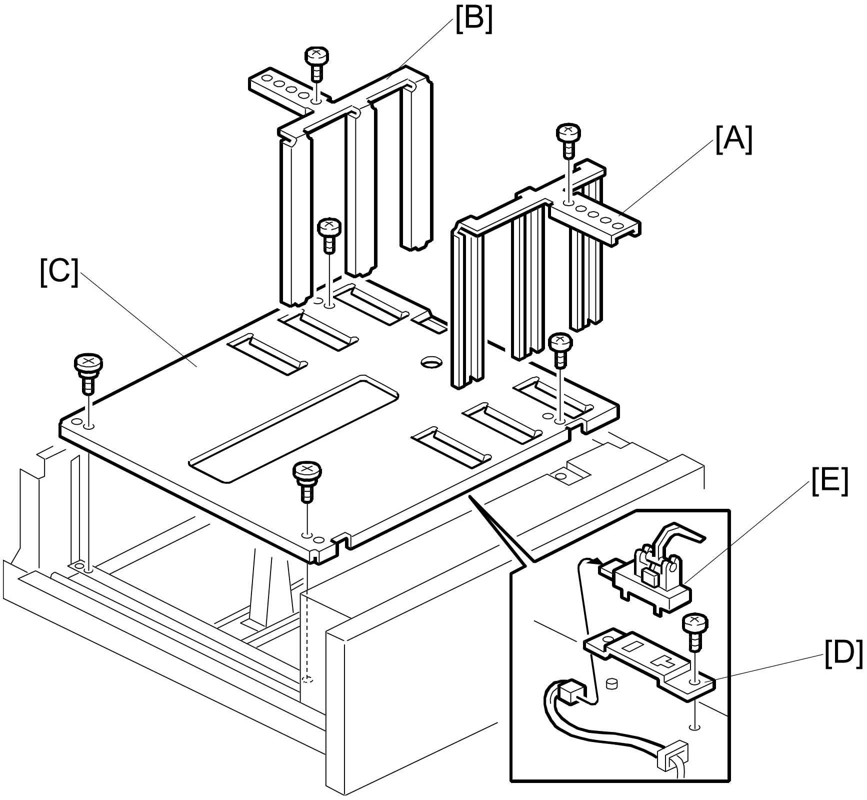
6.8.5 TANDEM SIDE FENCE MOTOR REMOVAL



1. Remove the bottom plate [A] of the right tandem tray (2 nylon rivets [B]).
2. Raise the lift arm [C] (2 screws).
3. Remove the cover [D] (1 screw).
4. Remove the motor/bracket assembly [E] (2 screws [F]).
5. Remove the side fence motor [G] (2 screws [H]).

NOTE: When installing the side fence drive motor, move both side fences to the innermost position, then set the motor gear between the two rack gears [I].

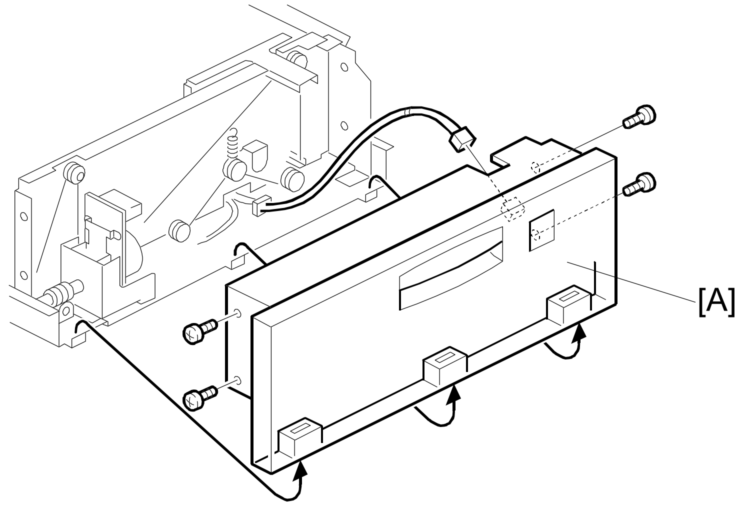
6.8.6 3RD TRAY PAPER SENSOR REMOVAL



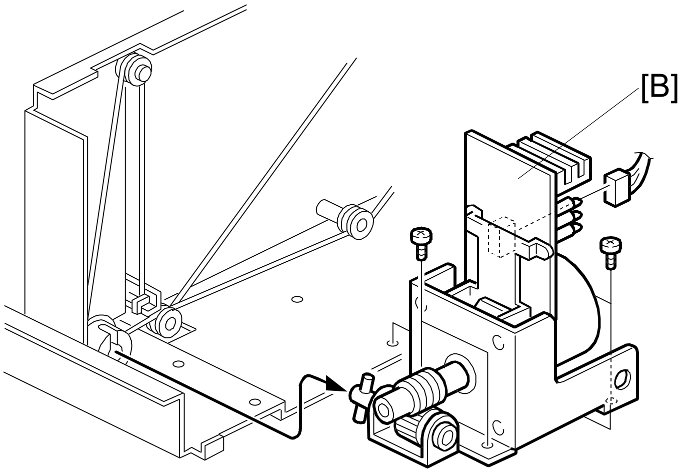
A229R678.WMF

1. Remove the built-in LCT. (Refer to Paper Tray Removal.)
2. Remove the front side fence [A] (1 screw).
3. Remove the rear side fence [B] (1 screw).
4. Remove the tray bottom plate [C] (4 screws).
5. Remove the bracket/sensor assembly [D] (1 screw).
6. Remove the paper sensor [E] (1 connector).

6.8.7 3RD TRAY LIFT WIRE REMOVAL

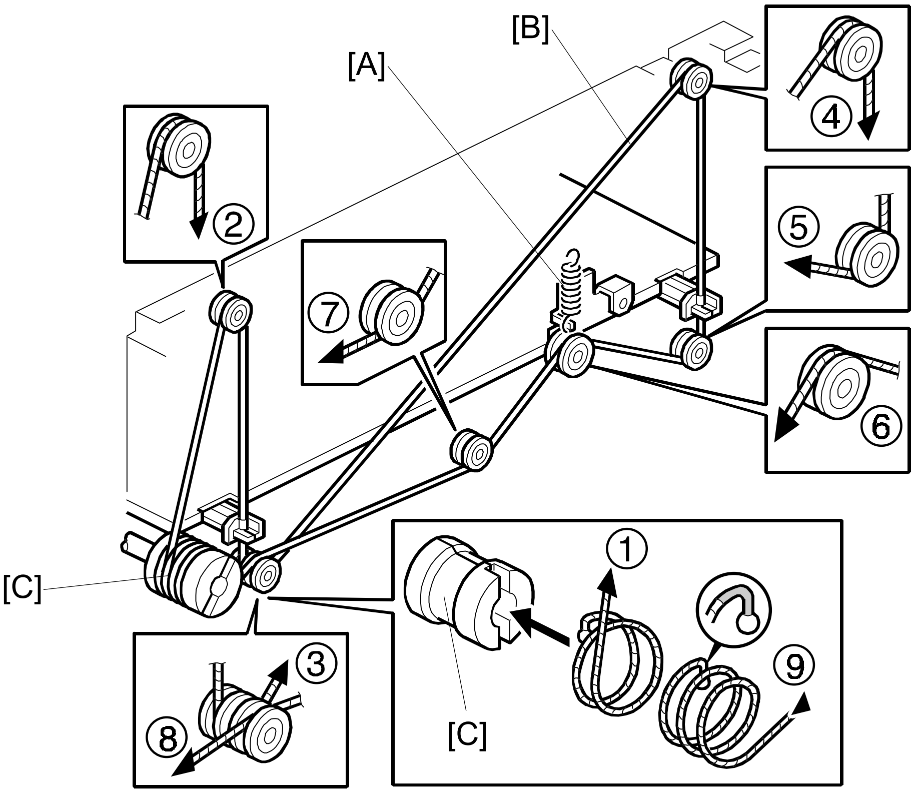


A229R677.WMF



A229R676.WMF

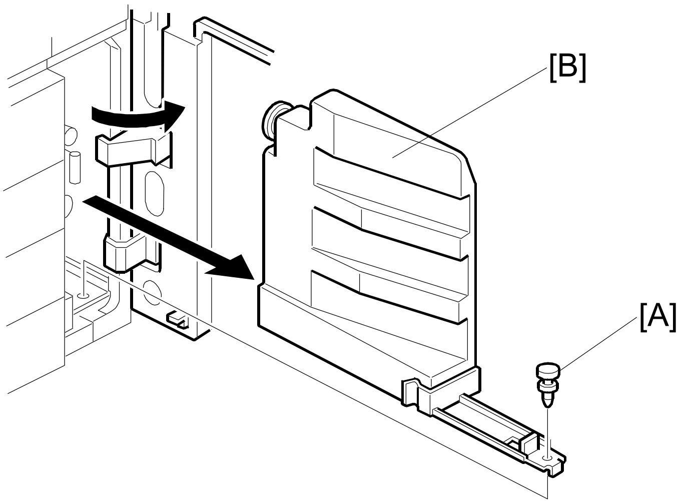
1. Remove the built-in LCT. (Refer to Paper Tray Removal.)
2. Remove the front cover [A] (4 screws, 1 connector, 3 hooks).
3. Remove the 3rd tray lift motor unit [B] (4 screws, 1 connector).



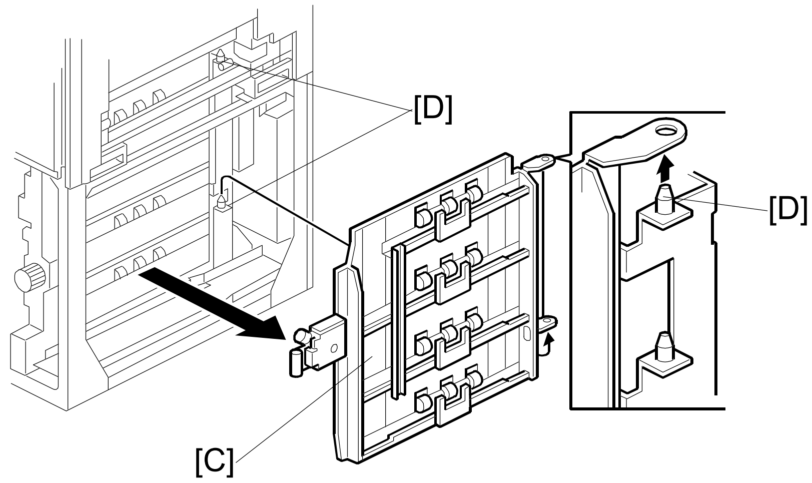
A229R679.WMF

4. Remove the spring [A].
5. Remove the wire [B].
6. Wind the end of the new wire with no marking around the tray lift drive pulley [C] in the correct direction, as shown. (①).
7. Route the wire, with the ball, as shown (②, ③, ④, ⑤, ⑥, ⑦, and ⑧).
8. Wind the end of wire with marking around the tray lift drive pulley in the correct direction, as shown (⑨).
9. Put the spring back on the wire tension bracket.
10. Wind the new tray lift wire for the other side as well.

6.8.8 PAPER FEED CLUTCH/RELAY CLUTCH REMOVAL

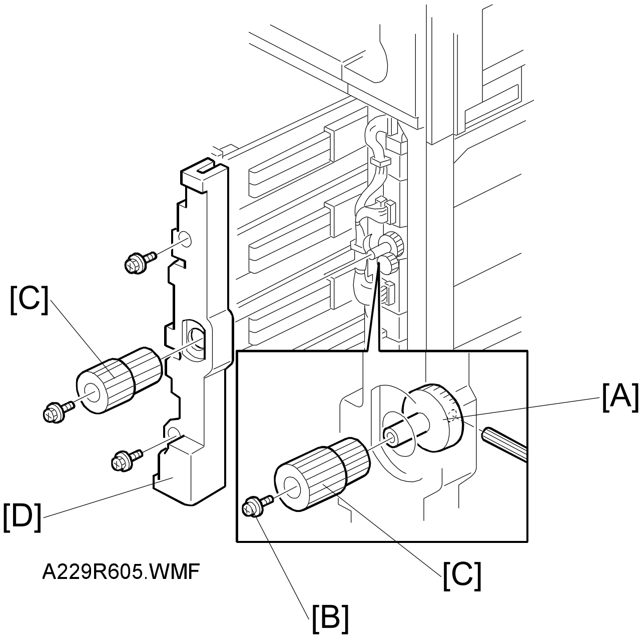


A229R603.WMF

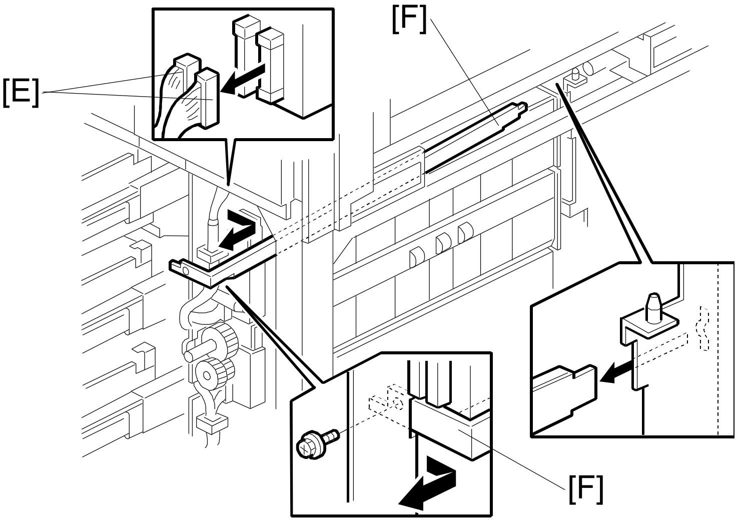


A229R604.WMF

1. Turn off the main switch, then open the right front door and remove the push-lock [A].
2. Remove the toner collection bottle [B].
   NOTE: If the LCT is installed, remove it from the copier.
3. Remove the lower right cover. (Refer to Lower Right Cover Removal.)
4. Remove the vertical transport guide [C].
   NOTE: When reinstalling the guide, rest it on the upper and lower pins [D].

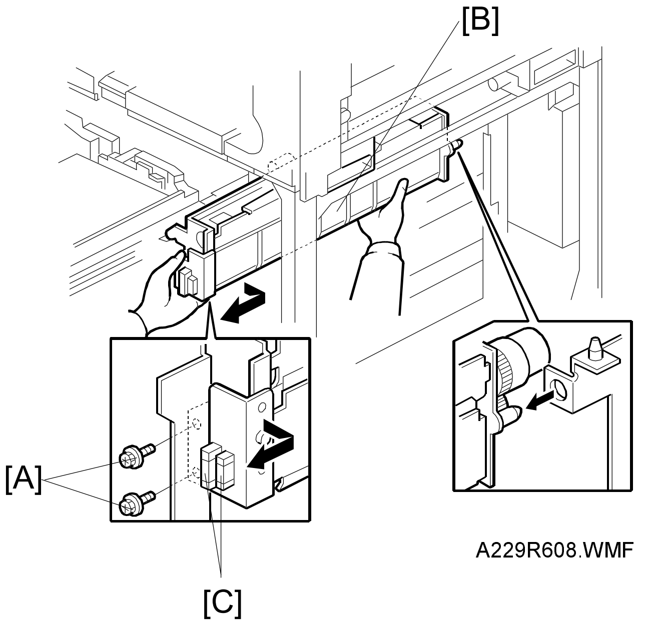


A229R605.WMF

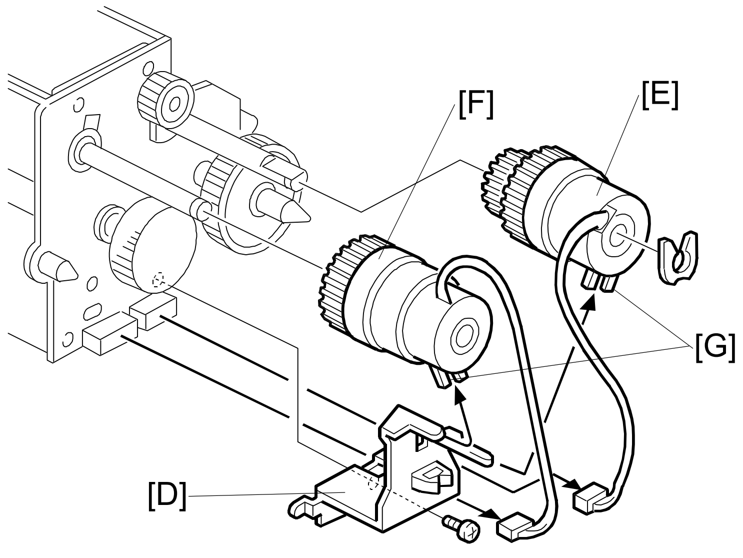


A229R606.WMF

5. While holding the shaft [A] with an Allen key, remove the screw [B], then remove the knob [C].
6. Pull out all paper trays, then remove the paper tray unit inner cover [D] (2 screws).
7. Remove the two connectors [E].
8. Remove the support bracket [F] (1 screw).
   NOTE: The support bracket is used only for the first feed station.



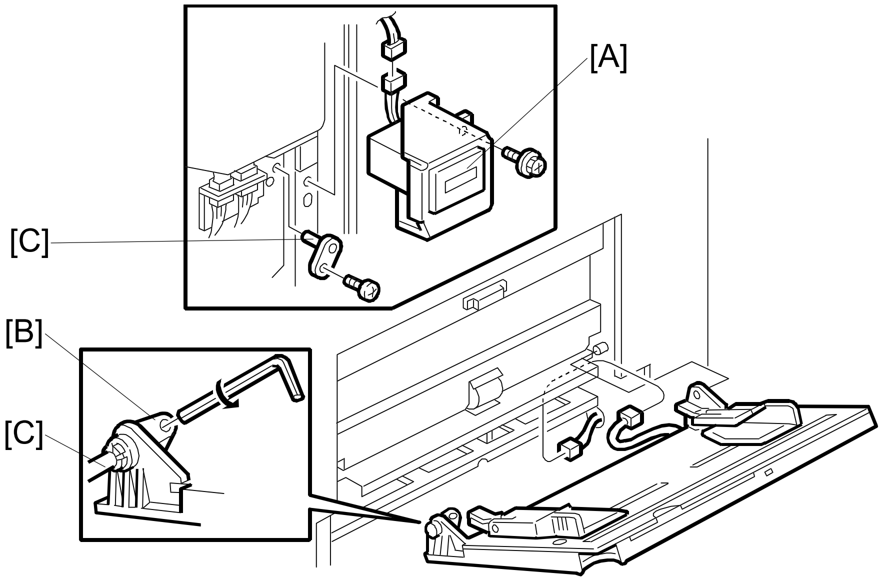
A229R608.WMF



A229R609.WMF

9. Fully draw out the paper tray.
10. Remove the two screws [A] that hold the tray feed unit [B].
11. Disconnect the connectors [C].
12. Remove the tray feed unit.
13. Remove the bracket [D] (1 screw).
14. Remove the paper feed clutch [E] (1 hook, 1 connector).
15. Remove the relay clutch [F] (1 connector).
    NOTE: When re-installing the clutches, put the stopper [G] of each clutch on the correct hook on the bracket.

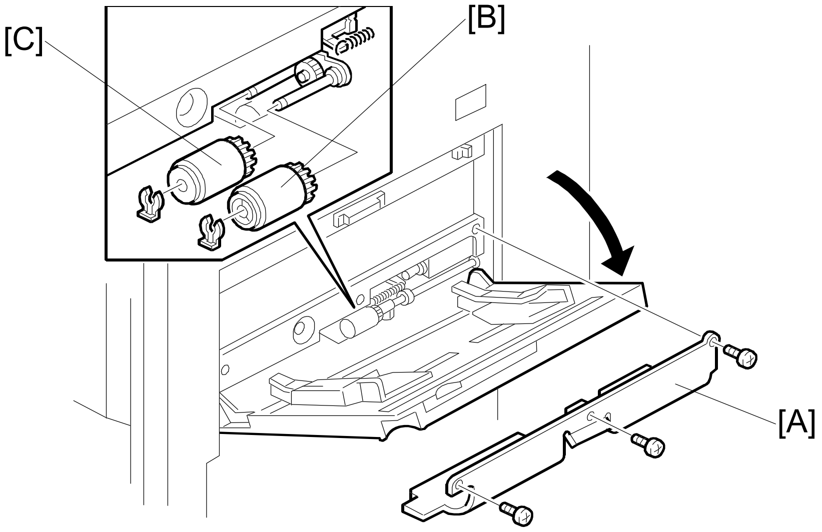
6.8.9 BY-PASS FEED TABLE REMOVAL



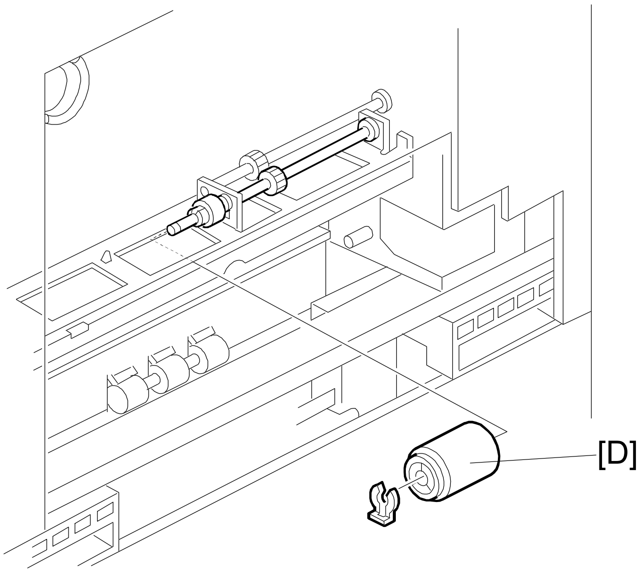
A229R610.WMF

1. Remove the right inner cover. (Refer to Right Inner Cover Removal.)
2. Remove the total counter with bracket [A] (1 screw, 1 connector).
3. Loosen the Allen screw [B] on the hinge.
4. Remove the hinge pin [C] (1 screw).
5. Remove the by-pass feed table (1 connector).

6.8.10 BY-PASS FEED ROLLER REPLACEMENT



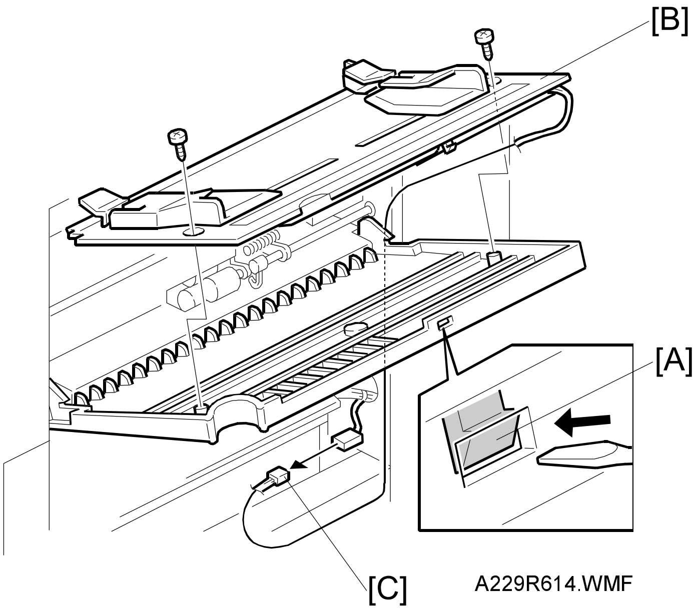
A229R611.WMF



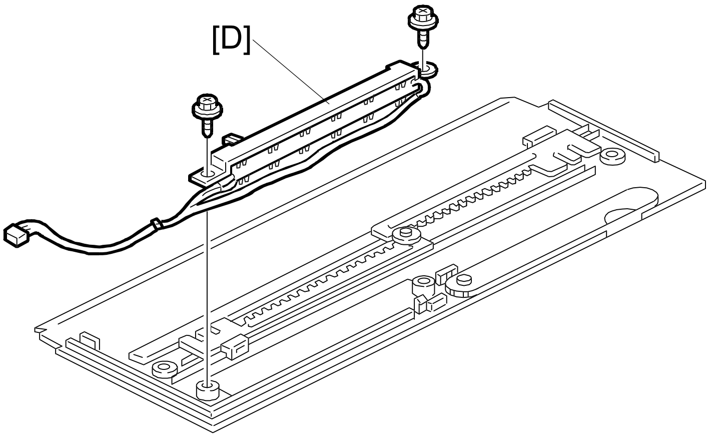
A229R613.WMF

1. Open the by-pass feed table, then remove the cover [A] (3 screws).
2. Replace the pick-up roller [B] (1 snap ring) and the feed roller [C] (1 snap ring).
   NOTE: The paper feed (pick-up, feed, separation) rollers used in the by-pass feed table and LCT are different from the paper feed rollers used in the 1st ~ 3rd feed units in the paper tray unit. They are not interchangeable.
3. Remove the feed unit cover. (Refer to Right Cover Removal.)
4. Replace the separation roller [D] (1 snap ring).

6.8.11 BY-PASS PAPER SIZE BOARD REPLACEMENT

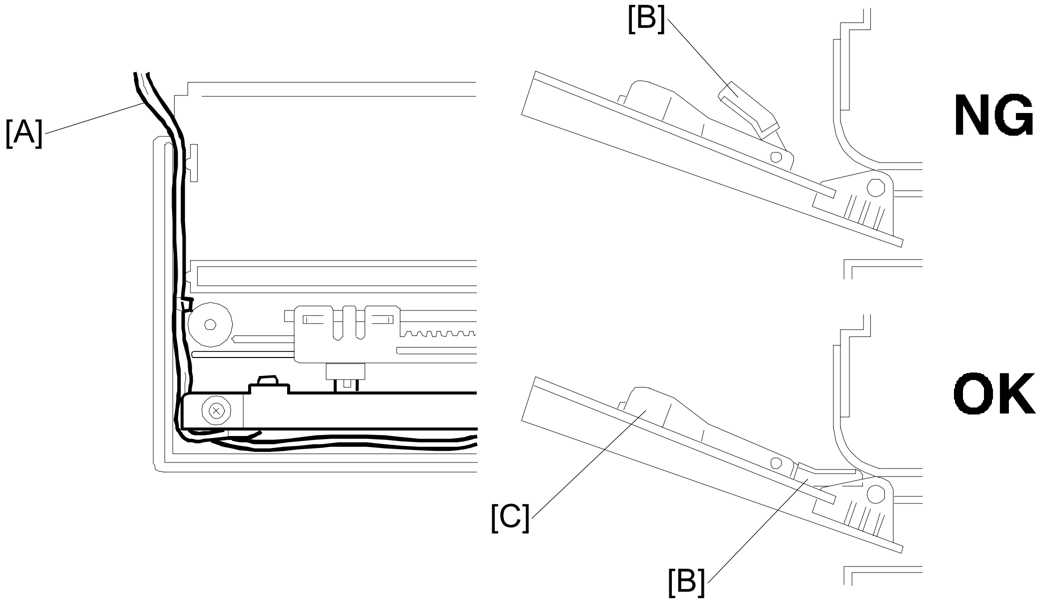


A229R614.WMF



A229R615.WMF

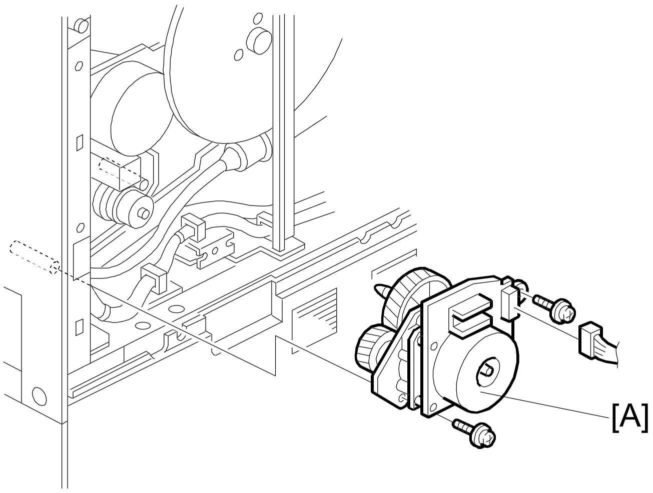
1. Turn off the main switch.
2. Open the by-pass table and remove the feed unit cover. (Refer to Right Cover Removal.)
3. While pushing the hook [A] with a flat-head screwdriver as shown, remove the table assembly [B] (2 screws, 1 connector [C]).
4. Remove the by-pass paper size board [D] (2 screws).



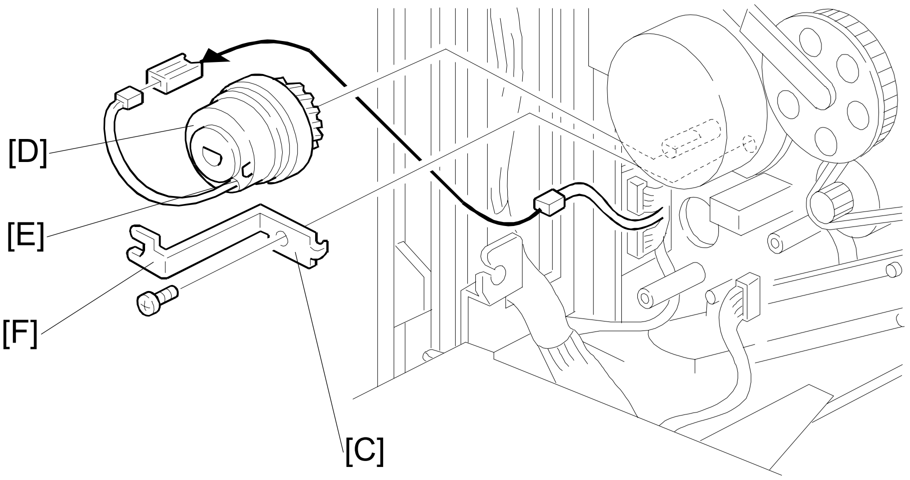
A229R616.WMF

5. Re-install the by-pass paper size sensor, then reassemble the by-pass feed table.
   NOTE: When installing the table assembly, route the wires [A] correctly as shown.
   The paper guides [B] must be in the lower position as shown.
6. Calibrate the by-pass feed sensor using SP mode1-904 as follows.
   1) Enter SP1-904-001 and place the side fence [C] at the A4 or 81/2 x 11 sideways position on the paper size decal on the table. Then press the Enter key on the touch panel.
   2) Enter SP1-904-002 and place the side fence [C] at the A6 or 41/2 x 51/2 lengthwise position on the paper size decal on the table. Then press the Enter key.

6.8.12 BY-PASS FEED MOTOR/CLUTCH REMOVAL



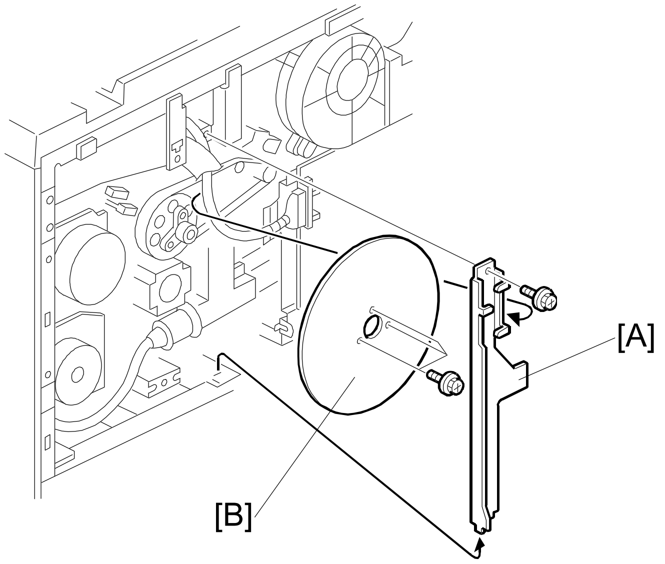
A229R617.WMF



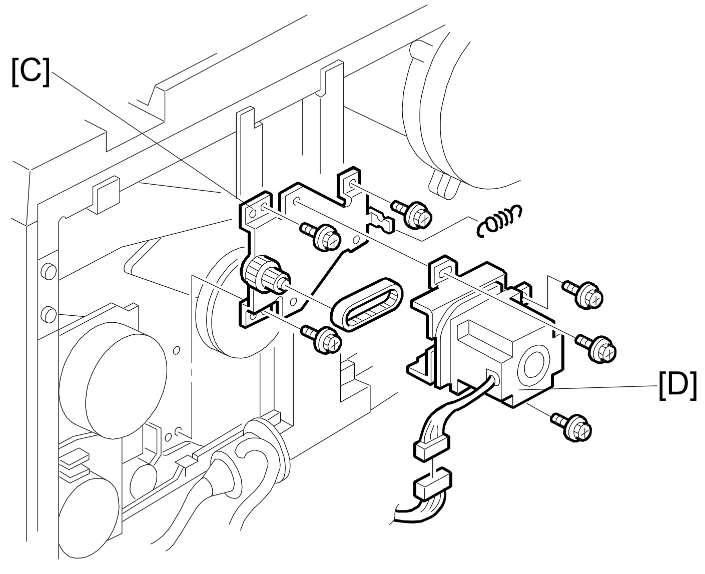
A229R618.WMF

1. Remove the upper rear cover. (Refer to Upper Rear Cover Removal.)
2. Remove the by-pass feed motor [A] (2 screws, 1 connector).
3. Remove the guide plate solenoid [C] (1 screw, 1 connector). See Copier Feed Unit Removal
4. Remove the clutch stopper [C] (1 screw).
5. Remove the by-pass feed clutch [D] (1 connector).
   NOTE: When re-installing the by-pass feed clutch [D], put the pin [E] on the clutch in the cutout [F] in the stopper.

6.8.13 REGISTRATION MOTOR REMOVAL



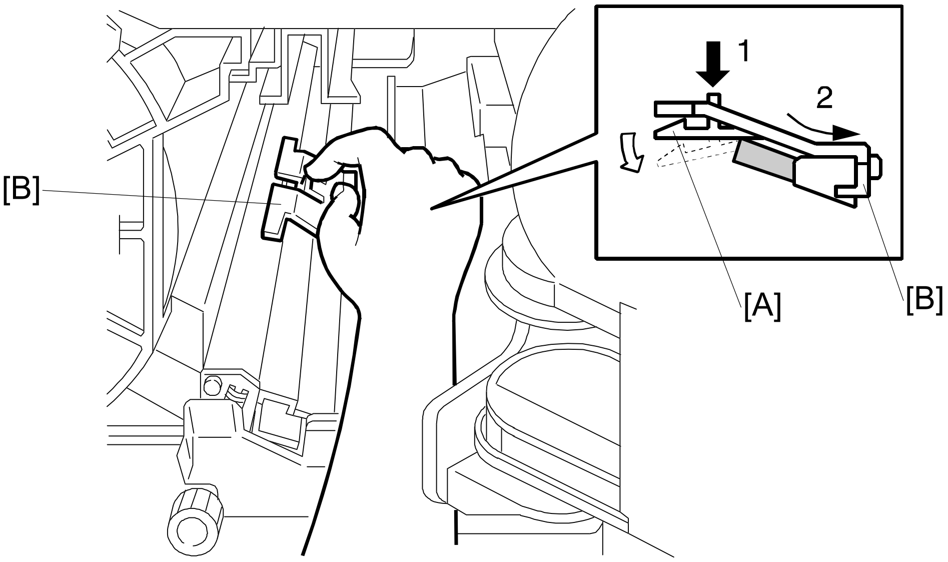
A229R619.WMF



A229R620.WMF

1. Remove the upper rear cover. (Refer to Cover Removal.)
2. Remove the bracket [A] (1 screw).
3. Remove the fly wheel [B] (3 screws).
4. Remove the bracket [C] with the motor (3 screws, 1 connector).
5. Remove the registration motor [D] (3 screws, 1 timing belt, and 1 spring).

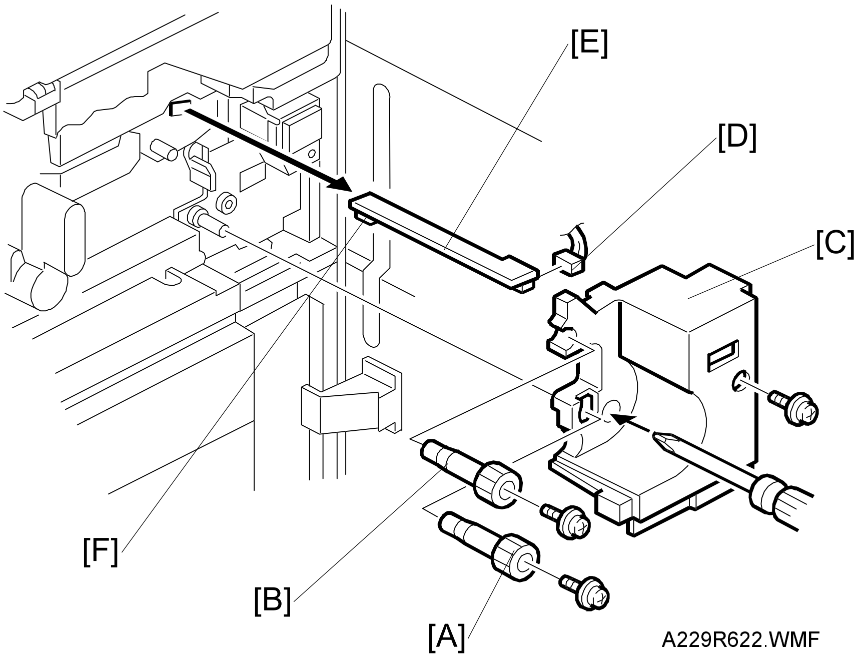
6.8.14 PAPER DUST REMOVER REMOVAL



A229R621.WMF

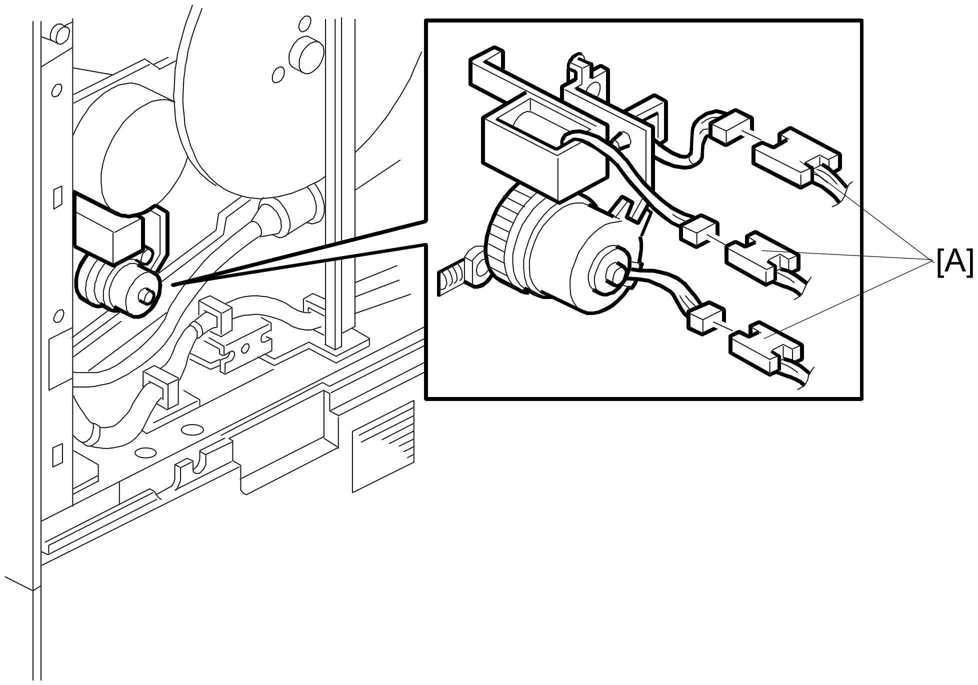
1. Remove the development unit. (Refer to Development Unit Removal.)
2. While pushing down the hook lever [A], remove the paper dust remover [B].
3. Remove paper dust inside the paper dust remover and clean inside it with a dry cloth or a blower-brush.

6.8.15 REGISTRATION SENSOR REMOVAL



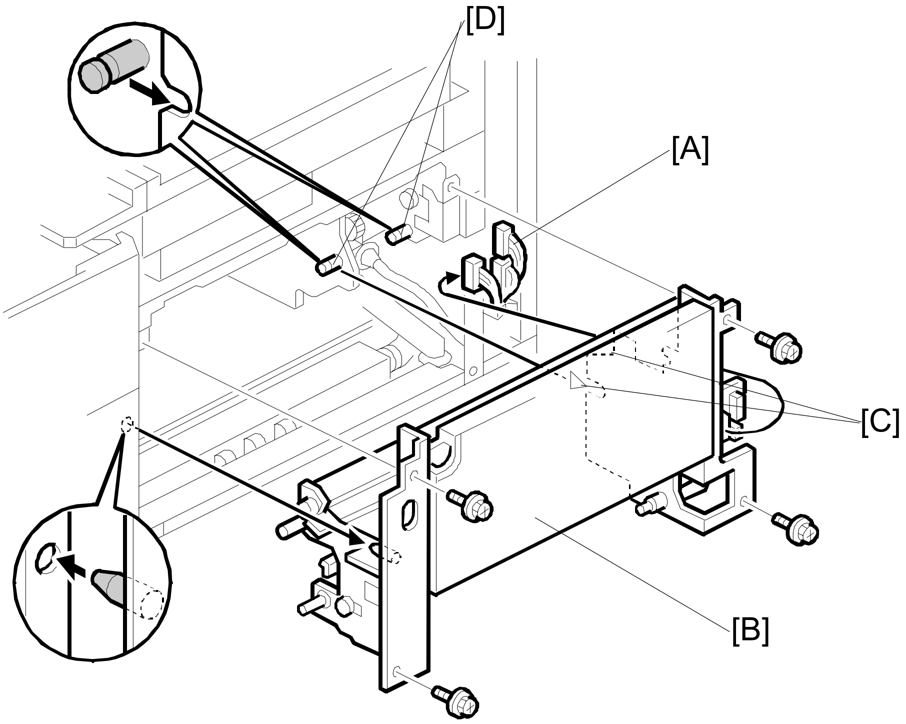
1. Remove the relay roller knob [A] (1 screw).
2. Remove the registration roller knob [B] (1 screw).
3. Remove the right inner cover [C] (1 screw).
4. Disconnect the connector [D].
5. Pull out the registration sensor assembly [E].
6. Clean the sensor [F] with a blower brush.

6.8.16 COPIER FEED UNIT REMOVAL



A229R623.WMF

1. Remove the development unit. (Refer to Development Unit Removal.)
2. Remove the right inner cover and the registration roller knob. (Refer to Registration Sensor Removal.)
3. Remove the by-pass feed motor. (Refer to By-pass Feed Motor/Clutch Removal.)
4. Remove the three connectors [A] for the guide plate solenoid, the pick-up solenoid, and the relay clutch.
   NOTE: Before disconnecting the connectors, make sure to identify them. Some of the connectors use identical pin leads but they are not interchangeable. Take special care not to misconnect the guide plate solenoid and registration clutch connectors.
5. Remove the upper right cover and the paper feed unit cover. (Refer to Cover Removal.)

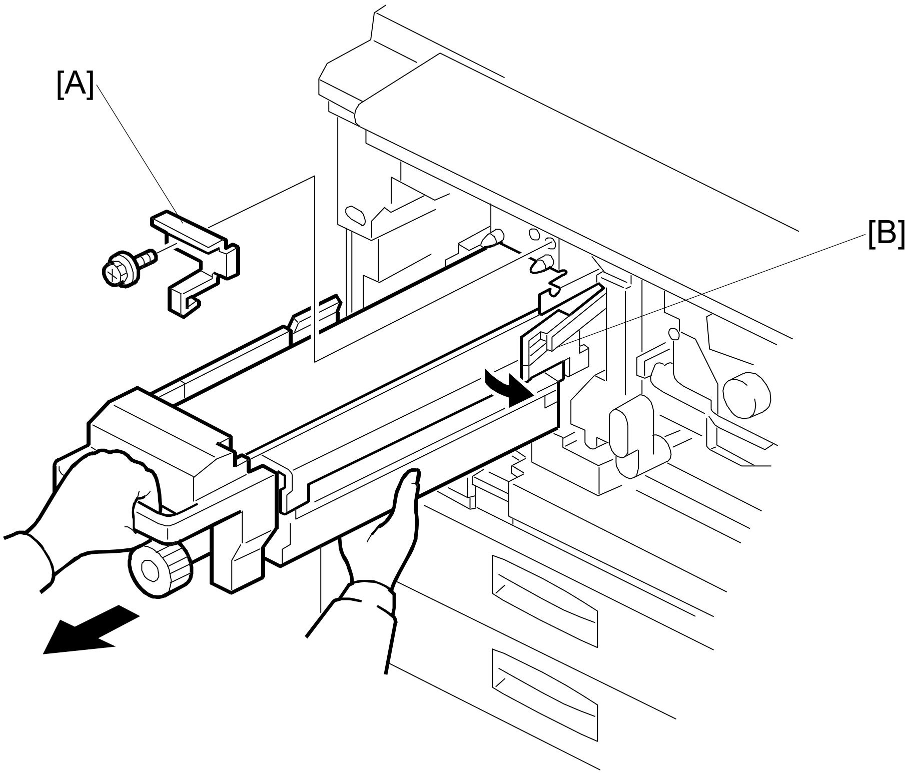


A229R624.WMF

6. Disconnect the three connectors [A].
7. Draw out the duplex unit about 10 cm.
8. Remove the copier feed unit [B] (4 screws).
   NOTE: When installing the copier feed unit in the copier:
   1) Do not pinch the harness.
   2) Keep the duplex unit drawn out.
   3) Fit the two cutouts [C] on the pins [D].

6.9 FUSING UNIT

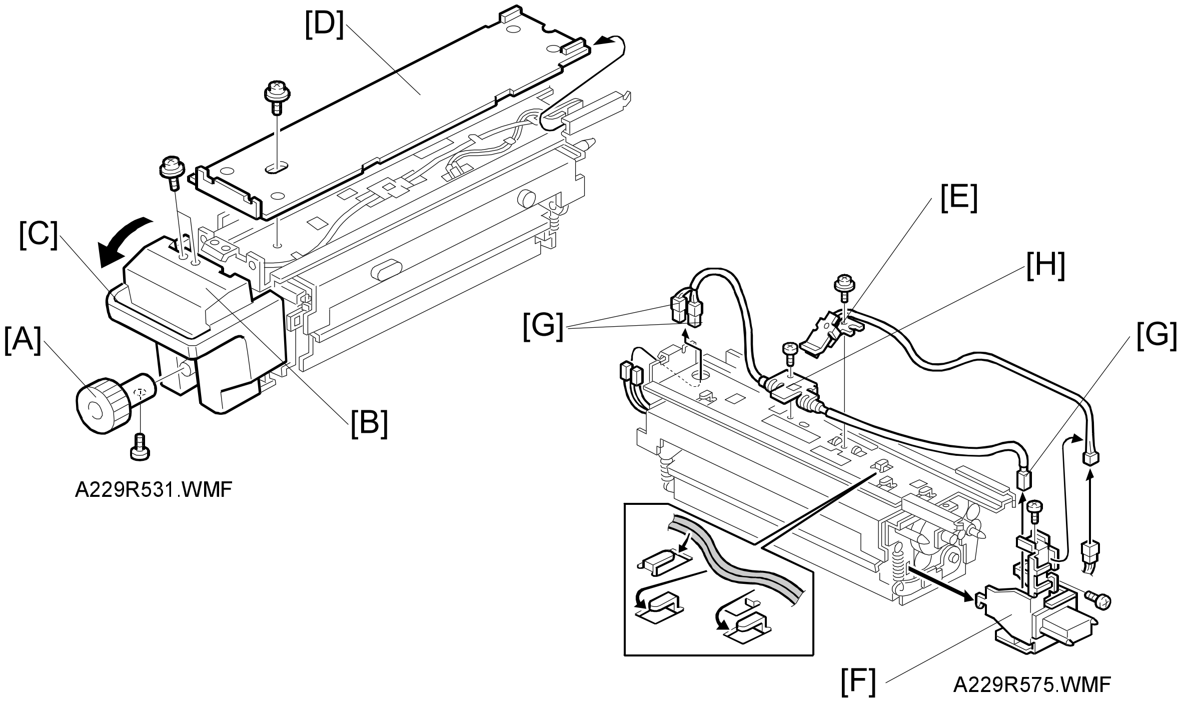
6.9.1 FUSING UNIT REMOVAL



A229R517.WMF

1. Turn off the main switch.
2. Open the front door.
3. Remove the stopper [A] (1 screw).
4. While releasing the lever [B], pull out the fusing unit as shown.
   NOTE: Hold the bottom of the fusing unit as shown.

6.9.2 FUSING THERMISTOR AND FUSING THERMOFUSE REPLACEMENT



A229R531.WMF

A229R575.WMF

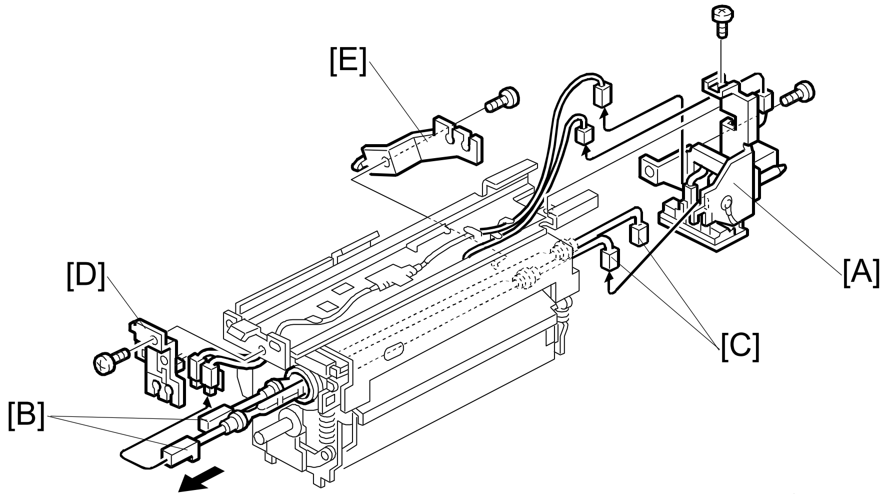
Fusing Thermistor Replacement

1. Remove the fusing unit. (Refer to Fusing Unit Removal.)
2. Remove the knob [A] (1 screw).
3. Remove the two screws that hold the fusing front cover [B].
4. Pull the lever [C], then lower the cover [B] to unhook the fusing unit.
5. Remove the fusing unit upper cover [D] (1 screw).
6. Replace the thermistor [E] (1 screw, 1 connector).
   NOTE: When re-assembling the fusing unit, secure the harness in the clamps correctly. Apply a little silicone oil to the point where the thermistor contacts the hot roller.

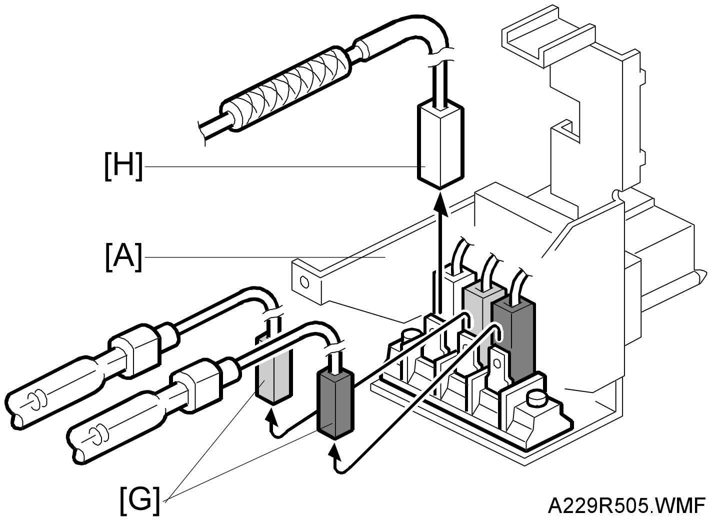
Fusing Thermofuse Replacement

1. Remove the fusing unit upper cover [D]. (Refer to Fusing Thermistor Replacement.)
2. Remove the terminal bracket [F] (2 screws).
3. Disconnect the three connectors [G].
4. Replace the fusing thermofuse [H] (1 screw).
   NOTE: When re-assembling the fusing unit, secure the harness in the clamps correctly.

6.9.3 FUSING LAMP REPLACEMENT

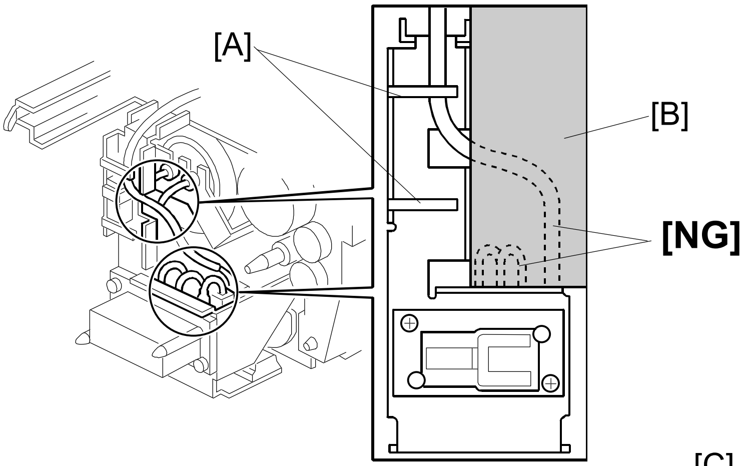


A229R504.WMF

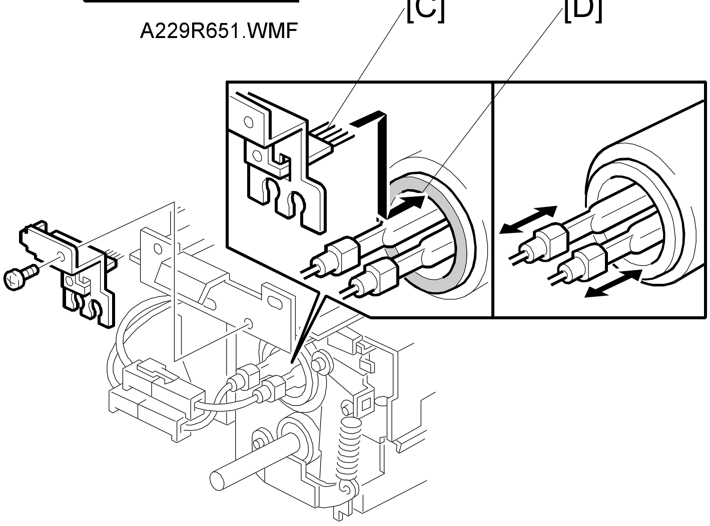


A229R505.WMF

1. Remove the fusing unit. (Refer to Fusing Unit Removal.)
2. Remove the terminal bracket [A] (2 screws).
3. Disconnect the front connectors [B] and the rear connectors [C].
4. Remove the front fusing lamp holder [D] (1 screw) and the rear fusing lamp holder [E] (1 screw).
5. Replace the fusing lamps [F].
   NOTE: At the rear terminal, make sure to connect the green connectors [G] and white connector (from the thermofuse) [H] in the correct positions on the terminal.



A229R651.WMF



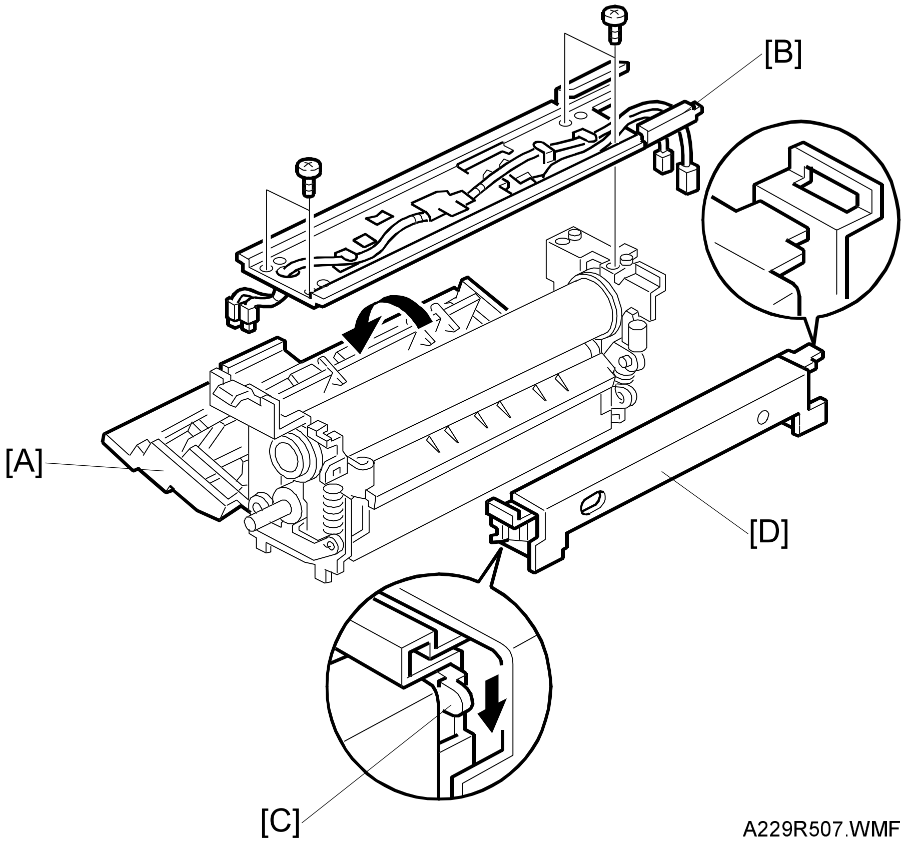
A229R650.WMF

NOTE: 2) When re-installing the thermistor, thermofuse, and lamps, secure all harnesses in the clamps [A] correctly and do not locate them in the area indicated as 'NG' [B].

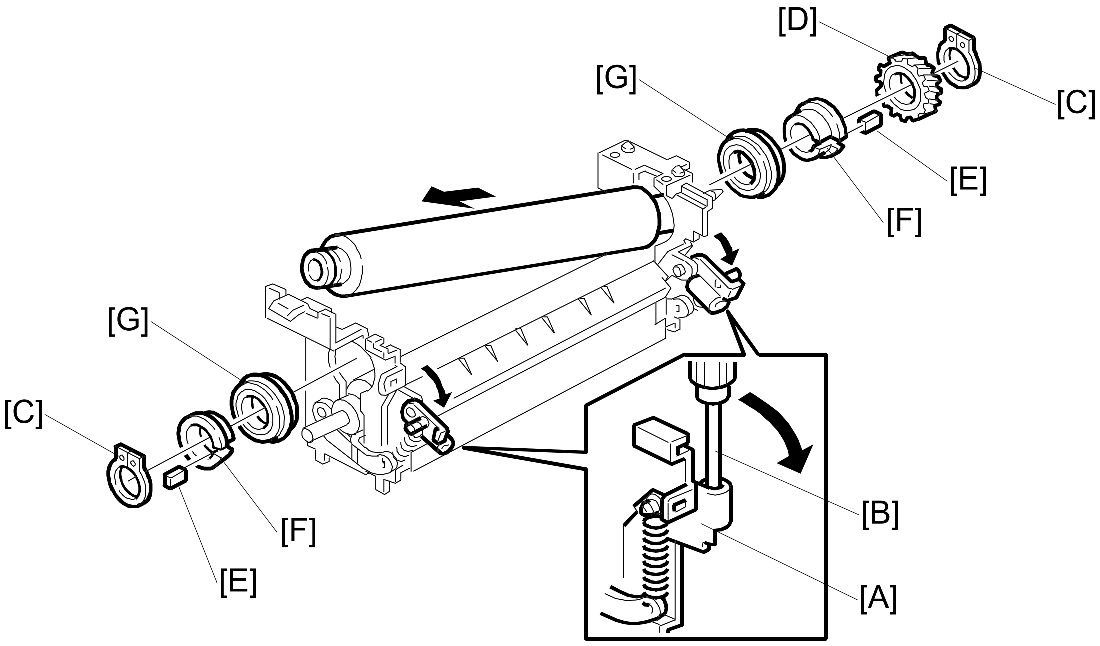
3) When re-installing the lamps, check that the grounding brush [C] contacts the hot roller [D].

4) When re-installing the lamps, check that they are installed correctly, and that they can move slightly from front to rear.

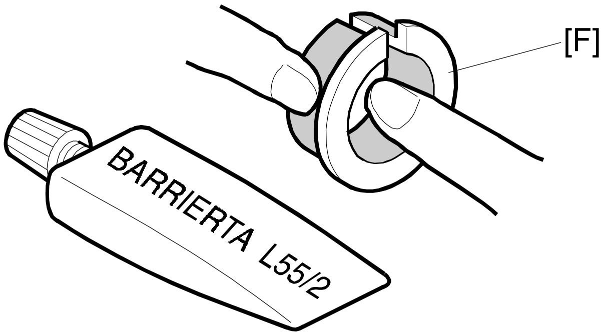
6.9.4 HOT ROLLER REPLACEMENT



1. Remove the fusing lamps. (Refer to Fusing Lamp Replacement.)
2. Lower the fusing exit assembly [A].
3. Remove the upper stay [B] (4 screws).
4. Lower the lever [C] and remove the oil supply unit [D].



A229R508.WMF



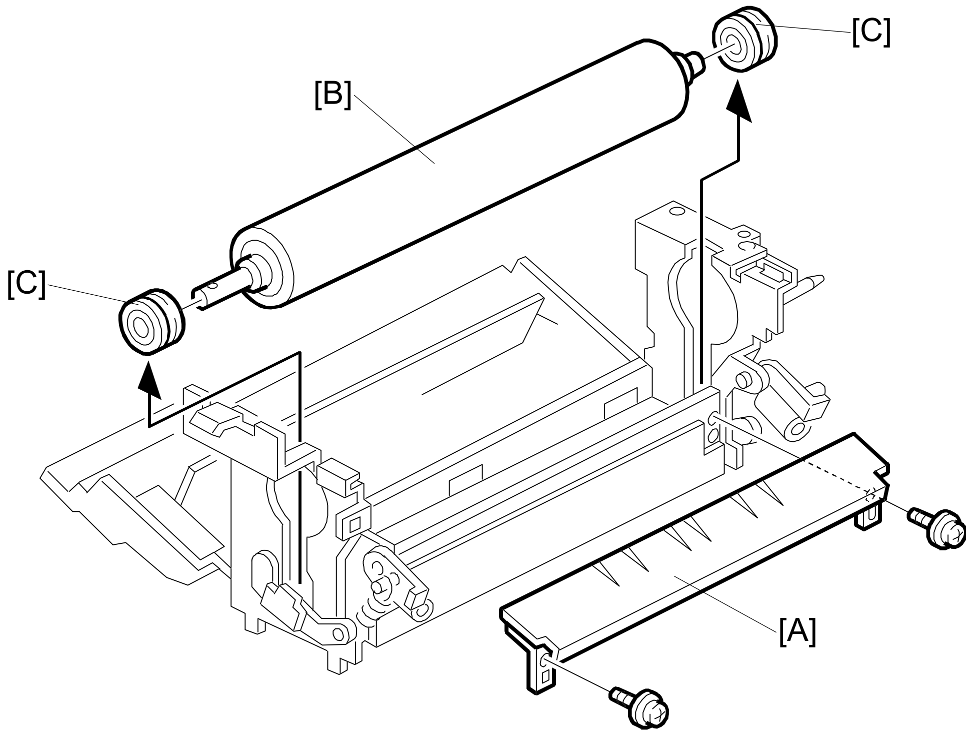
A229R652.WMF

5. Lower the pressure spring holders [A] at both sides using a screwdriver [B] as a lever.
6. Remove the front and rear C-rings [C], gear [D], anti-static spacers [E], isolating bushings [F], and bearings [G].

   NOTE: When installing a new hot roller:

   1) Lubricate the inner and outer surfaces of the isolating bushings [F] with BARRIERTA L55/2 grease.
   2) Lubricate the fusing drive gears and their shafts with G501grease.
   3) Peel off 3 cm (1 inch) from both ends of the protective sheet, and install the new hot roller.
      Before applying fusing pressure, remove the rest of the protective sheet.

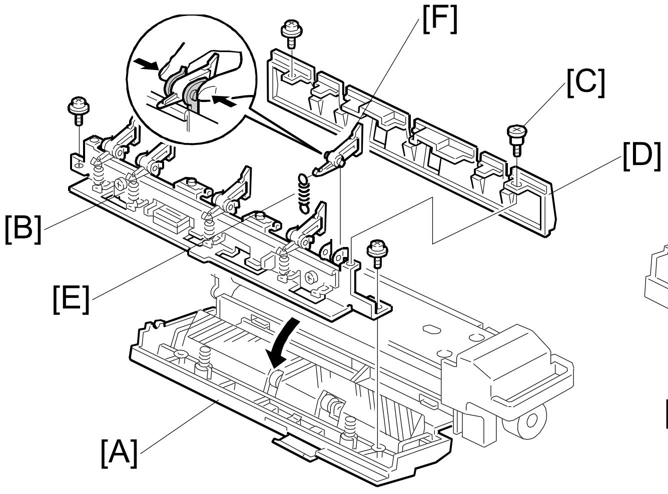
6.9.5 PRESSURE ROLLER AND BEARING REPLACEMENT



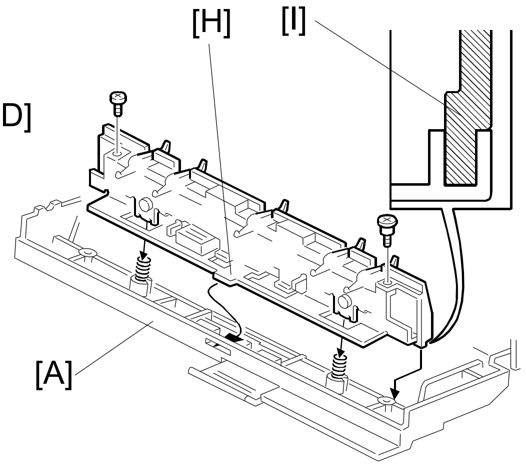
A229R509.WMF

1. Remove the hot roller. (Refer to Hot Roller Replacement.)
2. Remove the lower fusing entrance guide [A] (2 screws).
3. Lift the pressure roller [B] and remove it.
4. Replace the pressure roller and bearings [C].
   NOTE: When installing a new pressure roller:
   1) Lubricate the roller shaft and the inner surface of the bearings with BARRIERTA L55/2 grease.
   2) Lubricate the fusing drive gears and their shafts with G501 grease.
5. Re-assemble the machine.

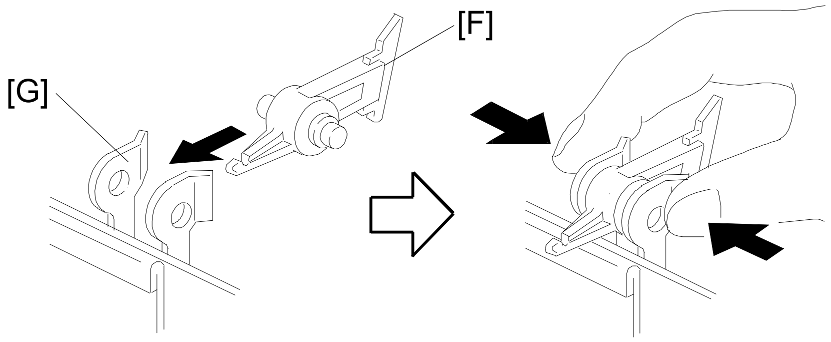
6.9.6 HOT ROLLER STRIPPER PAWL REPLACEMENT



A229R510.WMF



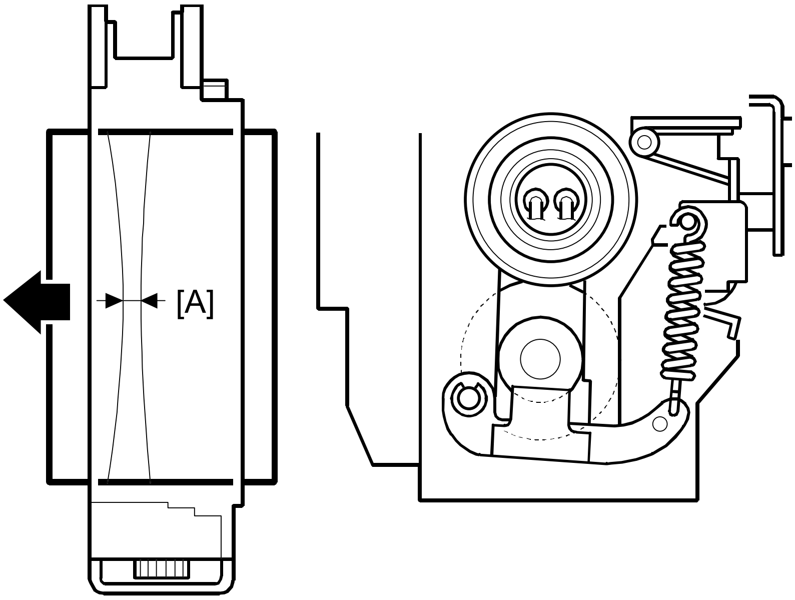
A229R653.WMF



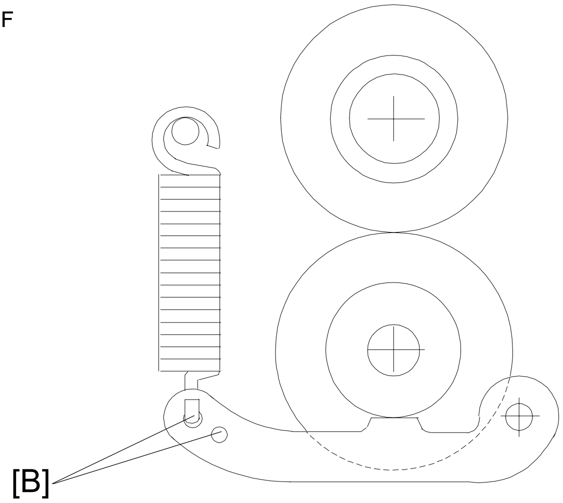
A229R511.WMF

1. Turn off the main switch and pull out the fusing unit.
2. Lower the fusing exit assembly [A].
3. Remove the fusing exit guide [B] (2 screws).
4. Remove the two screws (the front screw [C] is a stepped screw) that hold the upper exit guide [D].
5. Unhook the spring [E] then replace the pawls [F].
   NOTE: 1) After installing the new pawls, check that they are correctly held by the holders [G] as shown. If not, remove the pawl and bend the sides of the holder inward. Apply Barrierta L55/2 grease to the inner surfaces of the holder.
   2) When re-attaching the upper exit guide, put the hook [H] in the opening in the fusing exit assembly and fit the rib [I] in the rail.

6.9.7 FUSING PRESSURE ADJUSTMENT



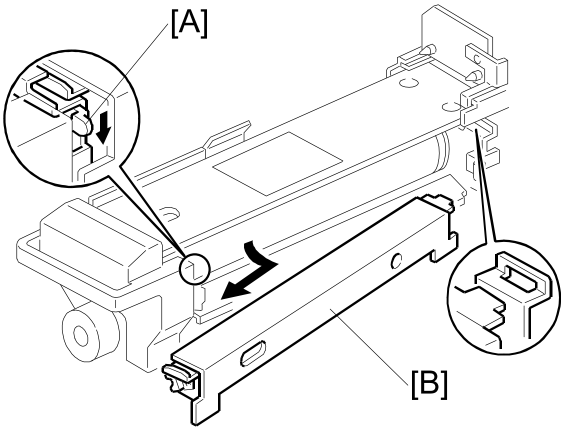
A229R512.WMF



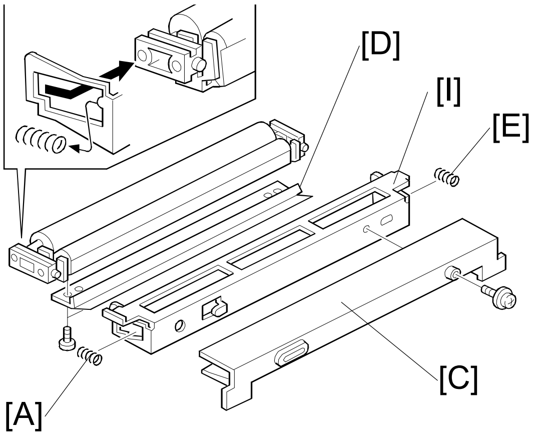
A229R513.WMF

1. Make a black copy (sky shot, A3/Double Letter paper).
2. As soon as the paper starts to exit, open the left door to stop the paper in the fusing unit.
3. Wait about 20 seconds, then turn the fusing knob quickly to deliver the paper.
4. Measure the nip band width [A] at the center.
5. If the nip band width is not within 8.8 ± 0.5 mm, change the spring hook position [B].

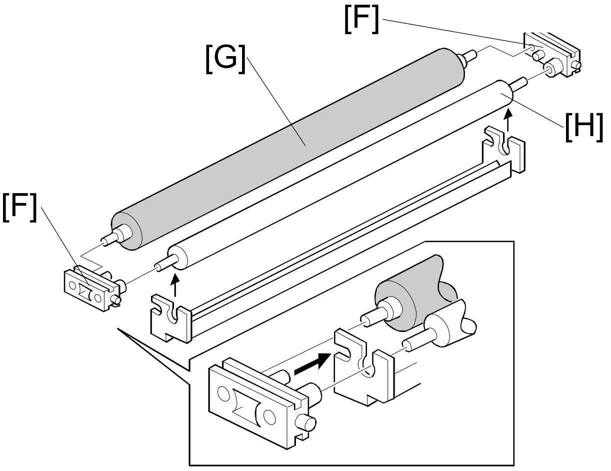
6.9.8 OIL SUPPLY/CLEANING ROLLER REPLACEMENT



A229R514.WMF



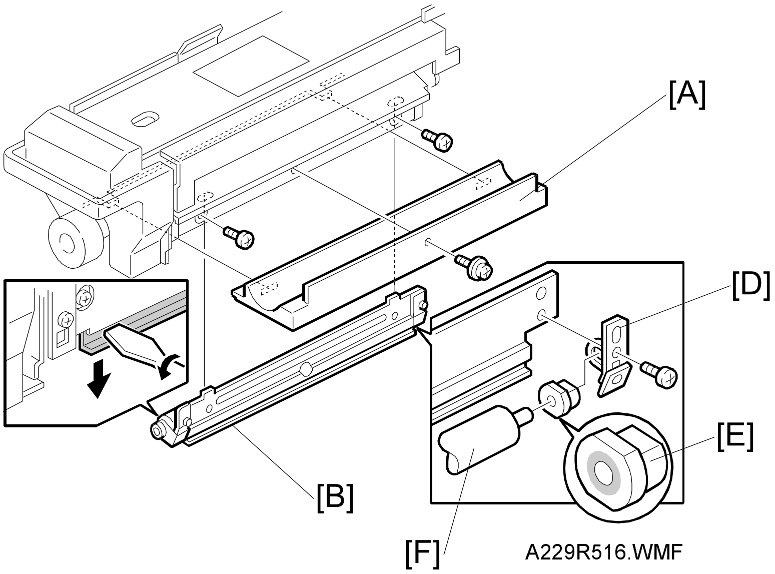
A229R654.WMF



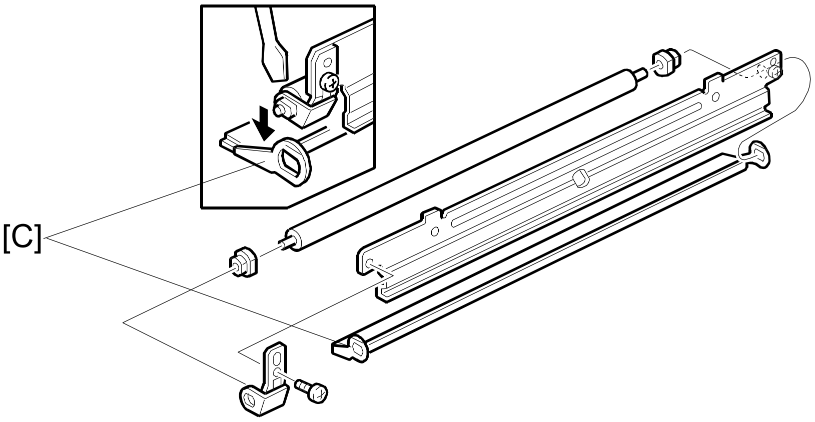
A229R655.WMF

1. Pull out the fusing unit.
2. Lower the lever [A].
3. Remove the oil supply unit [B].
4. Remove the upper entrance guide [C] (1 screw).
5. Remove the mylar bracket [D] (2 screws).
6. Remove the springs [E].
7. Remove the bushings [F].
8. Remove the oil supply roller [G], and the cleaning roller [H].
9. Install the new cleaning roller [H], and oil supply roller [G]. Then reassemble the unit.
   NOTE: Assemble the cleaning roller [H], oil supply roller [G], and bushings [F]. Then, install the assembled parts on the bracket [I].

6.9.9 PRESSURE ROLLER CLEANING ROLLER REPLACEMENT



A229R516.WMF

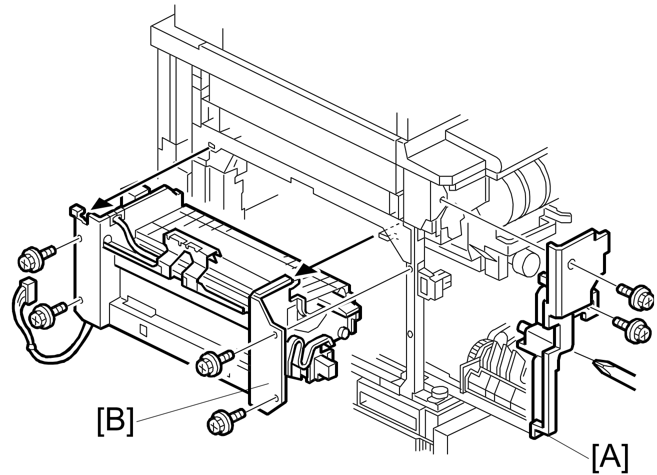


A229R693.WMF

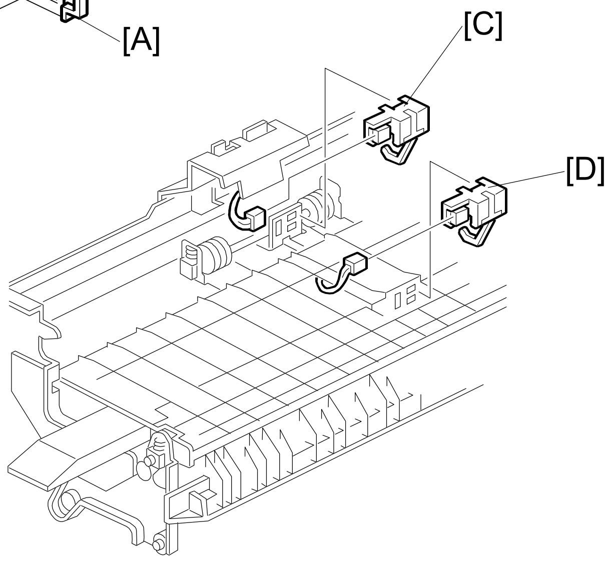
1. Pull out the fusing unit.
2. Remove the bottom plate [A] (1 screw).
3. Remove the cleaning roller unit [B] (2 screws).
4. **(EU only)** Remove the cleaning roller brush [C].
5. Remove the brackets [D] (1 screw each).
6. Remove the bushings [E].
7. Replace the cleaning roller [F].
8. Reassemble the unit.

6.10 PAPER EXIT/DUPLEX UNIT

6.10.1 EXIT SENSOR/FUSING EXIT SENSOR



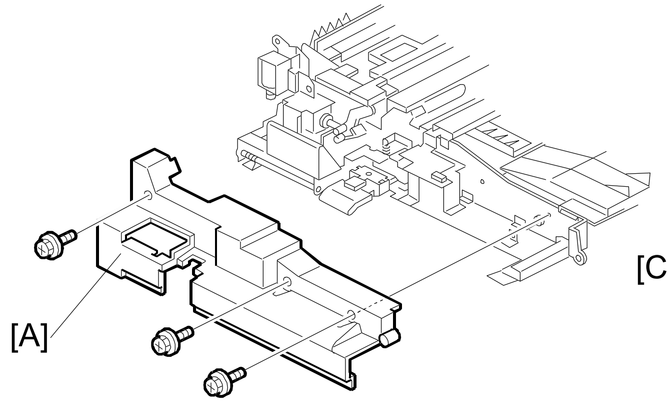
A229R579.WMF



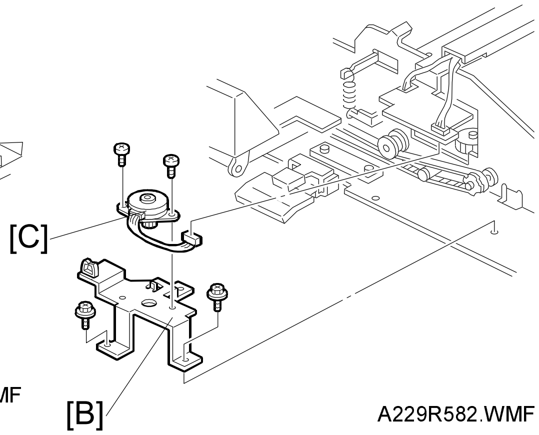
A229R580.WMF

1. Open the front door.
2. Pull out the duplex unit.
3. Remove the left cover (see Exterior).
4. Remove the left inner cover [A] (2 screws).
5. Remove the paper exit unit [B] (4 screws, 1 connector).
6. Remove the exit sensor [C] (1 connector).
7. Remove the fusing exit sensor [D] (1 connector).

6.10.2 JOGGER MOTOR



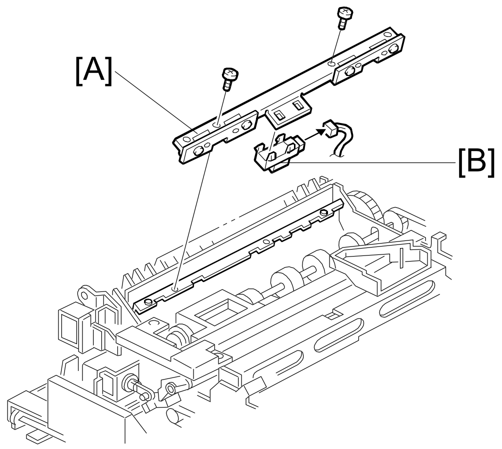
A229R581.WMF



A229R582.WMF

1. Open the front door.
2. Pull out the duplex unit.
3. Remove the duplex front cover [A] (3 screws).
4. Remove the jogger motor bracket [B] (2 screws).
5. Remove the jogger motor [C] (2 screws, 1 connector).

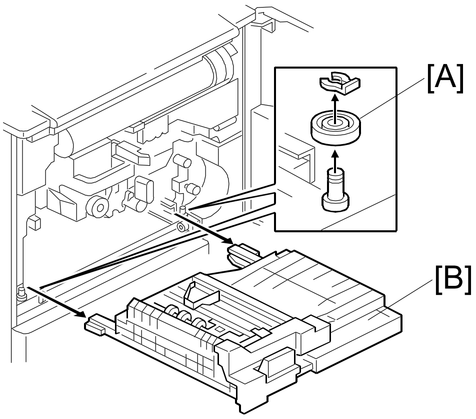
6.10.3 DUPLEX ENTRANCE SENSOR



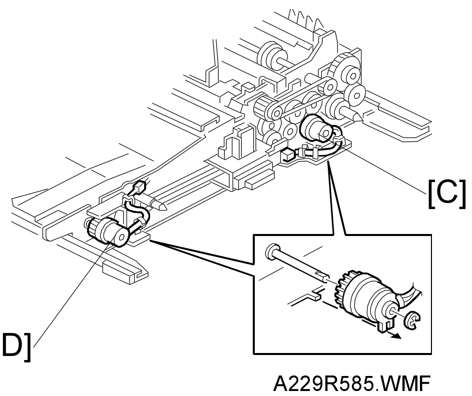
A229R583.WMF

1. Open the front door.
2. Pull out the duplex unit.
3. Remove the sensor bracket [A] (2 screws).
4. Remove the duplex entrance sensor [B] (1 connector).

6.10.4 DUPLEX TRANSPORT/DUPLEX FEED CLUTCHES



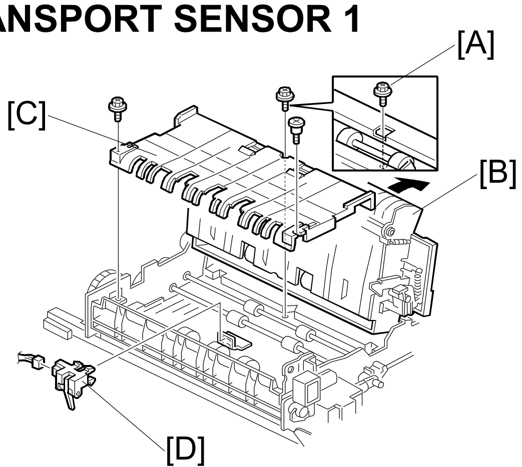
A229R584.WMF



A229R585.WMF

1. Open the front door.
2. Pull out the duplex unit.
3. Remove the two pulleys [A] (1 snap ring each).
4. Remove the duplex unit [B].
5. Remove the duplex transport clutch [C] (1 E-ring).
6. Remove the duplex feed clutch [D] (1 E-ring).

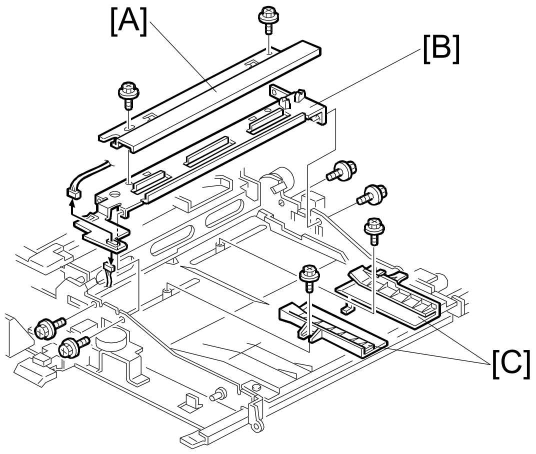
6.10.5 DUPLEX TRANSPORT SENSOR 1



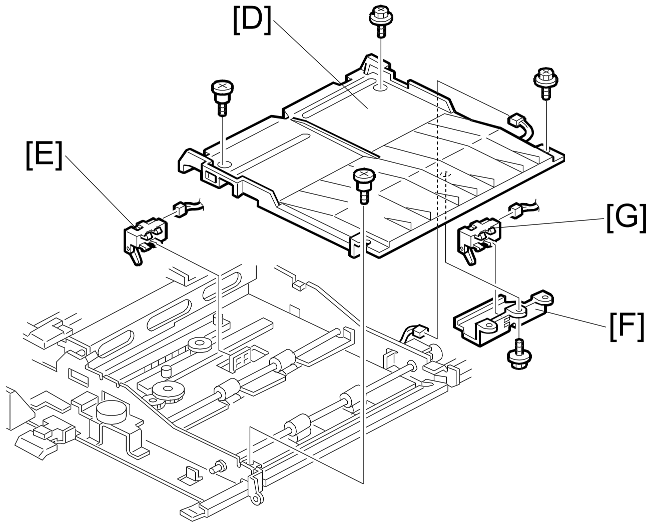
A229R586.WMF

1. Open the front door.
2. Pull out the duplex unit.
3. Remove the screw [A].
4. Open the inverter roller unit [B] (pull the jam removal level E4).
5. Remove the guide [C] (2 screws).
6. Remove duplex transport sensor 1 [D] (1 connector).

6.10.6 DUPLEX TRANSPORT SENSORS 2 & 3



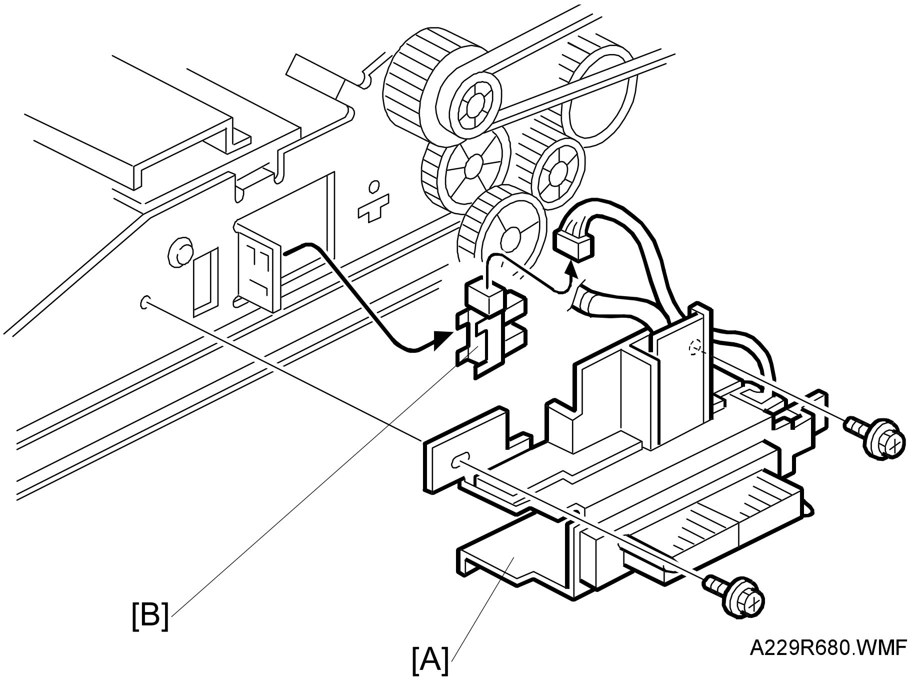
A229R587.WMF



A229R588.WMF

1. Open the front door.
2. Pull out and remove the duplex unit (see Duplex Transport/Duplex Feed Clutch Removal).
3. Remove the duplex front cover (see Jogger Motor Removal).
4. Remove the cover bracket [A] (2 screws).
5. Remove the center bracket [B] (4 screws, 2 connectors).
6. Remove the jogger fence [C] (1 screw each).
7. Remove the upper duplex cover [D] (4 screws, 1 connector).
8. Remove duplex transport sensor 2 [E] (1 connector).
9. Remove the duplex transport sensor bracket [F] (1 screw).
10. Remove duplex transport sensor 3 [G] (1 connector).

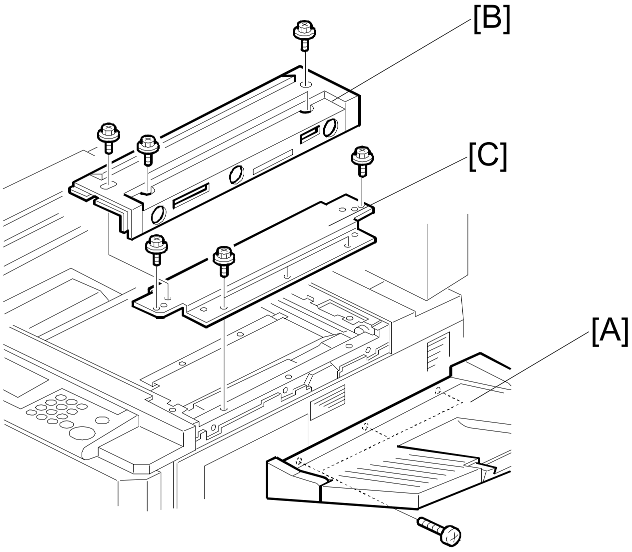
6.10.7 JOGGER HP SENSOR



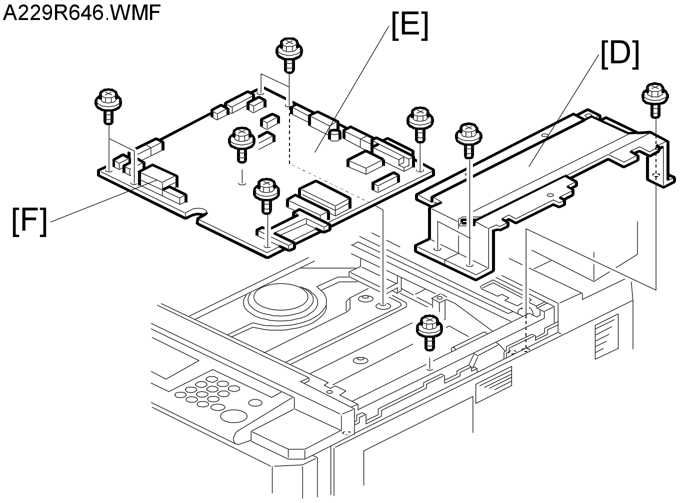
1. Open the front door.
2. Pull out the duplex unit.
3. Remove the duplex unit. (See Duplex Transport/Feed Clutch Removal.)
4. Remove the duplex connector bracket [A] (2 screws).
5. Remove the jogger HP sensor [B] (1 connector).

6.11 BOARDS AND OTHER ITEMS

6.11.1 SBICU BOARD



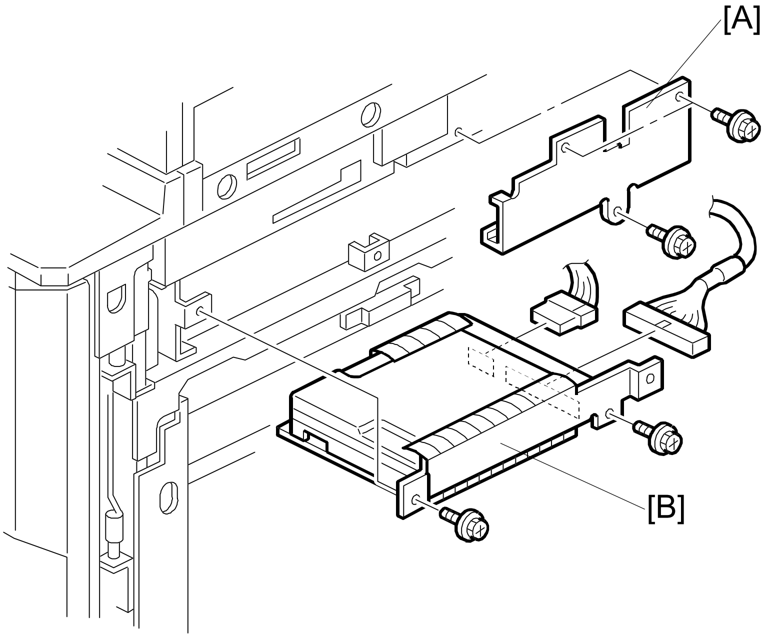
A229R646.WMF



A229R647.WMF

1. Remove the lens block assembly. (Refer to Lens Block Removal.)
2. Remove the original exit tray [A] (3 screws).
3. Remove the upper right cover [B] (4 screws).
4. Remove the right stay [C] (6 screws).
5. Remove the right inner cover [D] (3 screws).
6. Remove the SBICU board [E] (7 screws, all connectors).
7. Remove the NV-RAM [F] from the old SBICU board and install it on the new board.

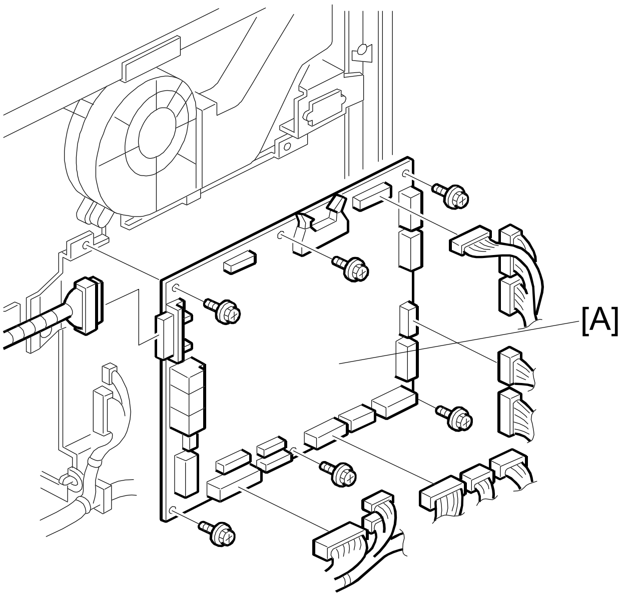
6.11.2 HARD DISK DRIVE



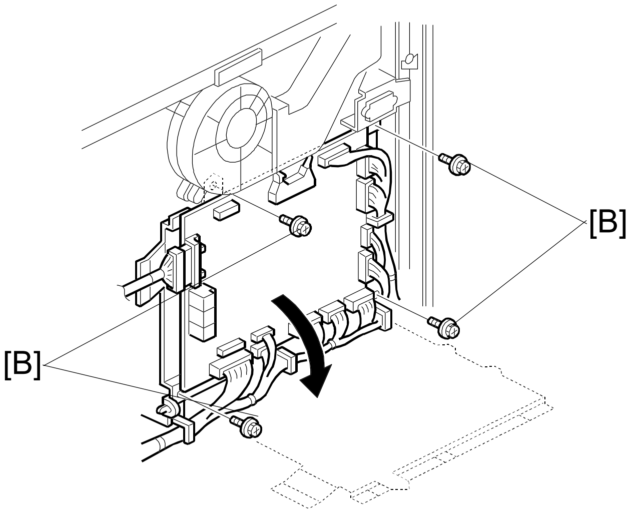
A229R648.WMF

1. Remove the upper right cover. (Refer to Upper Right Cover Removal.)
2. Remove the hard disk ground plate [A] (3 screws).
3. Replace the hard disk [B] (2 screws, 2 connectors).
   NOTE: Do not drop the hard disk or shock it violently.
4. After replacing the hard disk, do SP4-911-006 “Bad Sector Information Reset.”

6.11.3 I/O BOARD



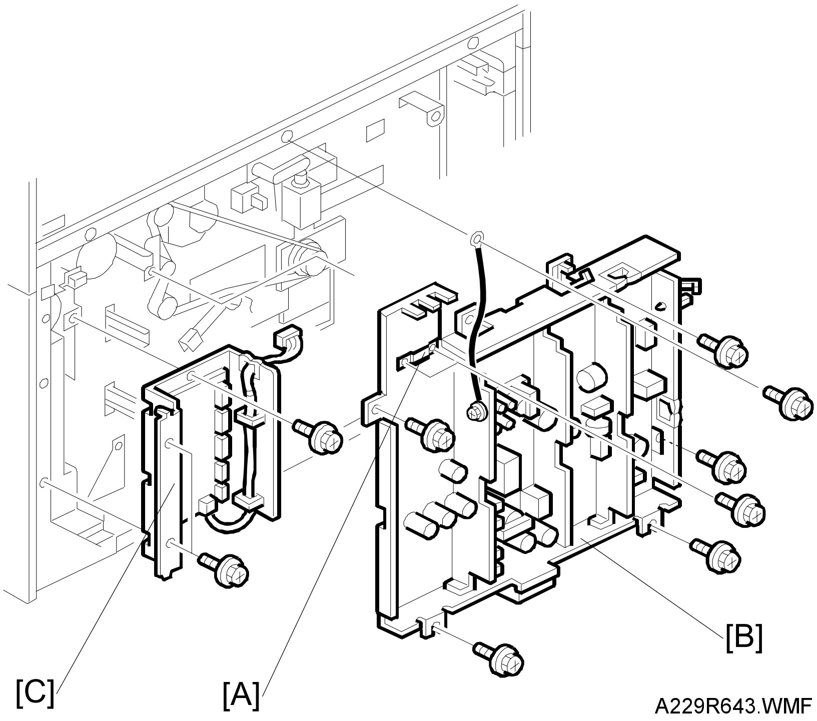
A229R642.WMF



A229R649.WMF

1. Turn off the main switch.
2. Remove the upper rear cover (Refer to Upper Rear Cover Removal.)
3. Disconnect all connectors from I/O Board [A].
4. Remove the I/O board [A] (6 screws).
   NOTE: If the screws [B] of the I/O board bracket are removed, the I/O board can be swung out.

6.11.4 PSU



1. Turn off the main switch.
2. Remove the upper and lower rear cover. (Refer to Upper and Lower Rear Cover Removal.)
3. Remove the harness clamp [A] (2 screws).
4. Remove the PSU [B] (6 screws, all connectors).

6.11.5 PAPER FEED CONTROL BOARD (PFC)

1. Turn off the main switch.
2. Remove the lower rear cover. (Refer to Lower Rear Cover Removal.)
3. Remove the Paper Feed Control Board [C] (3 screws, All connector).

6.12 COPY IMAGE ADJUSTMENTS: PRINTING/SCANNING

NOTE: 1) You need to perform these adjustment(s) after replacing any of the following parts:
- Scanner Wires
- Lens Block
- Scanner Motor
- Polygon Mirror Motor
- Paper Side Fences
- Memory All Clear

2) For more details about accessing SP modes, refer to section 4.

6.12.1 PRINTING

NOTE: 1) Make sure the paper is installed correctly in each paper tray before you start these adjustments.
2) Use the Trimming Area Pattern (SP2-902-3, No. 10) to print the test pattern for the following procedures.
3) Set SP 2-902-3 to 0 again after completing these printing adjustments.

Registration - Leading Edge

1. Check the leading edge registration using the Trimming Area Pattern, and adjust it using SP1-001 if necessary. The specification is: 3 ± 2 mm.

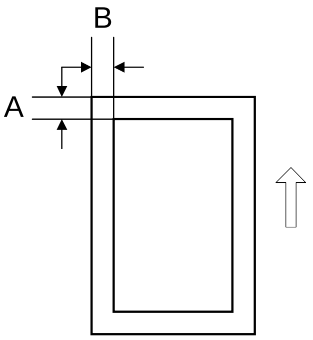
Registration – Side-to-Side

Do the parallel image adjustment after the side-to-side registration adjustment.

Using SP Mode

1. Check the side-to-side registration for each paper feed station using the Trimming Area Pattern, and adjust them using the following SP modes if necessary.

	SP mode	**Specification**
1st paper feed	SP1-002-1	2 ± 1.5 mm
2nd paper feed	SP1-002-2	
3rd paper feed (Optional PFU tray 1),	SP1-002-3	
4th paper feed (Optional PFU tray 2)	SP1-002-4	
Duplex	SP1-002-5	
By-pass feed	SP1-002-6	
LCT	SP1-002-7	



A229R633.WMF

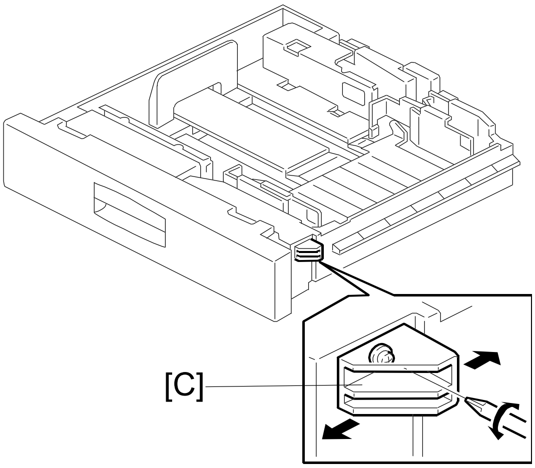
A: Leading Edge Registration
B: Side-to-side Registration

Mechanical Adjustment

- Side-to-side Positioning Adjustment (Tandem Tray and Built-in LCT) -

When the tray is put in the paper feed unit, the side-to-side positioning plate [C] presses the feed tray against the rubber stopper on the frame of the paper tray unit. By moving the positioning plate, the tray position can be changed to adjust the side-to-side registration.

NOTE: Do this mechanical adjustment only if the side-to-side registration cannot be adjusted to within standard using SP mode. In such a case, do the mechanical adjustment first, then adjust with the SP mode.

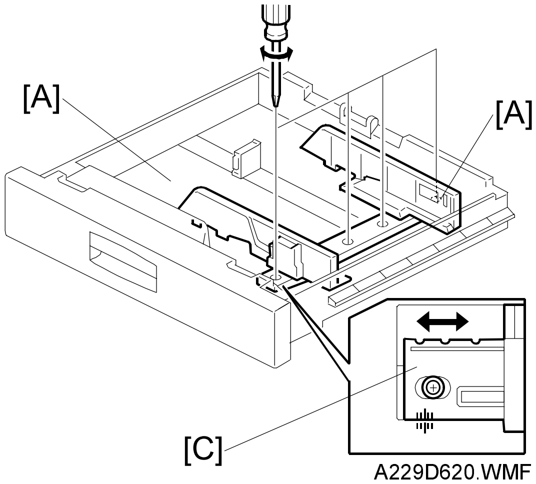


A229D619.WMF

- Side-to-side Positioning (Except for the Tandem Tray and Built-in LCT) -

Side plates [A] are fixed to the positioning plate [B]. By moving the positioning plate (fixed with four screws), the paper position can be changed to adjust the side-to-side registration.

NOTE: Do this mechanical adjustment only if the side-to-side registration cannot be adjusted to within standard using SP mode. In such a case, do the mechanical adjustment first, then adjust with the SP mode.



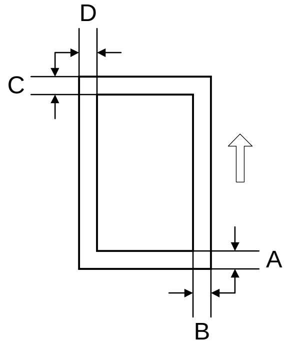
A229D620.WMF

Blank Margin

NOTE: If the leading edge/side-to-side registration can not be adjusted within the specifications, adjust the leading/left side edge blank margin.

1. Check the trailing edge and right side edge blank margins using the Trimming Area Pattern, and adjust them using the following SP modes if necessary.

	SP mode	**Specification**
Trailing edge	SP2-101-2	More than 1.0 mm
Right edge	SP2-101-4	More than 0.5 mm
Leading edge	SP2-101-1	3 ± 2 mm
Left edge	SP2-101-3	2 ± 1.5 mm



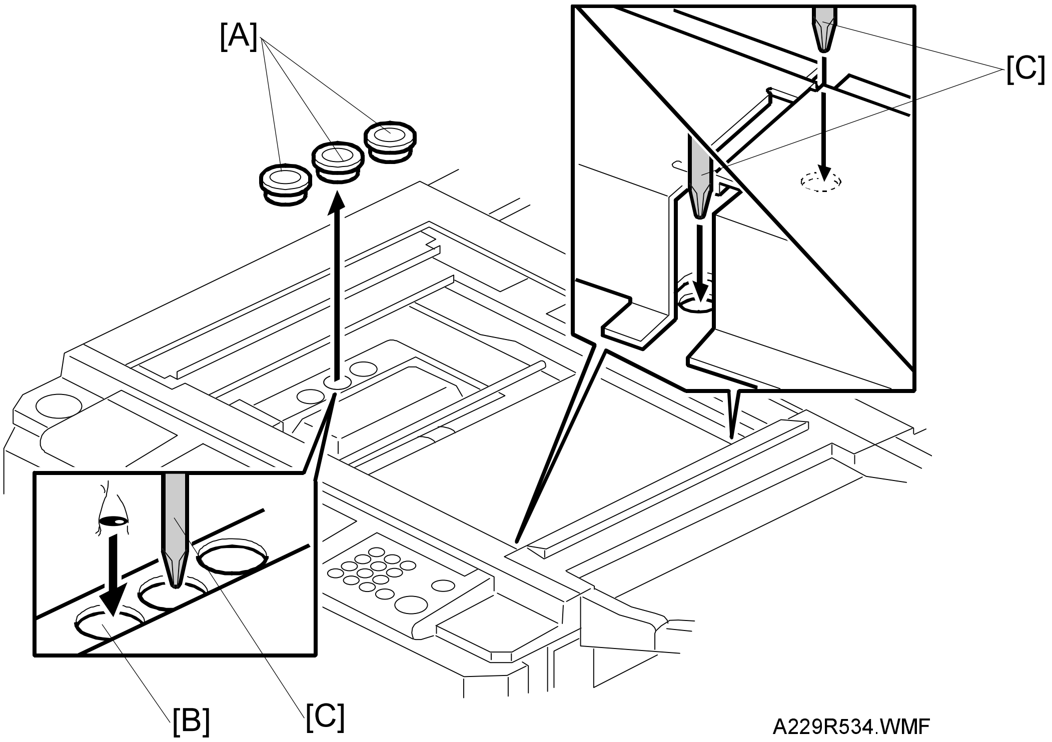
A: Trailing Edge Blank Margin
B: Right Edge Blank Margin
C: Leading Edge Blank Margin
D: Left Edge Blank Margin

A229R634.WMF

6.12.2 PARALLELOGRAM IMAGE ADJUSTMENT

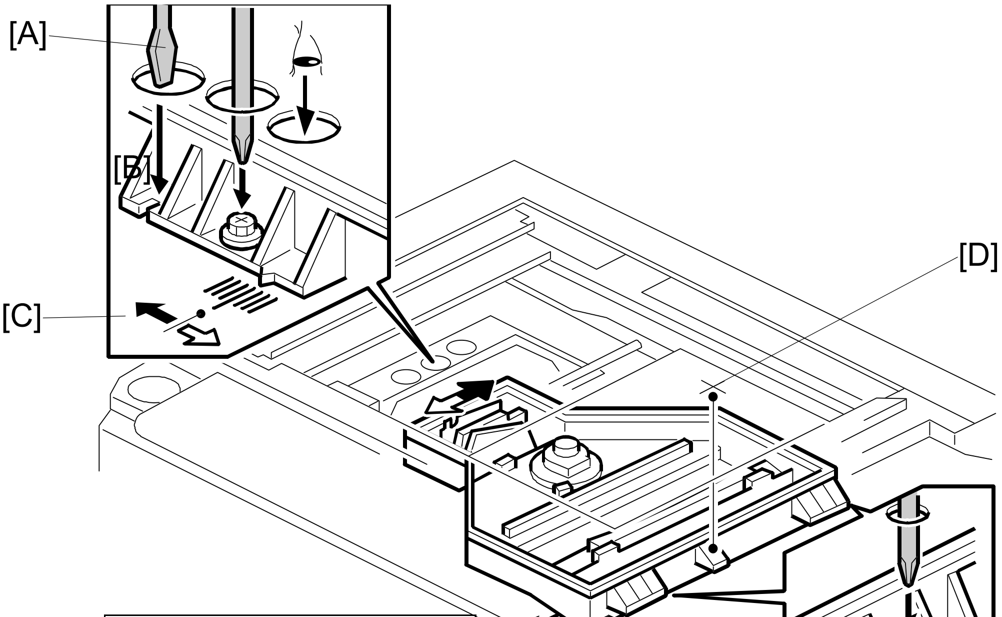
Do the following procedure if a parallelogram type image is printed while using a trimming area pattern to adjust the printing registration or the printing margin.

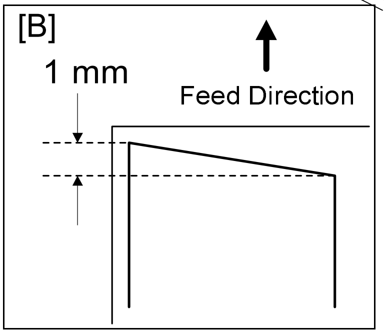
NOTE: 1) The following procedure should be done after adjusting the side-to-side registration for each paper tray.
2) This adjustment is only effective for a parallelogram image caused by the printer. It should not be applied if the skew is caused by the scanner.



A229R534.WMF

1. Check whether a parallelogram image appears as shown on the next page when printing a trimming area pattern (SP2-902-3, No. 10). If it appears, do the following.
2. Remove the exposure glass (see Replacement and Adjustment – Exposure Glass Removal).
3. Remove the three caps [A].
4. Make a note of the position of the laser unit using the scale through the hole [B].
5. Loosen the three screws [C] that hold the laser unit.





A229R535.WMF

A229R591.WMF

6. Adjust the laser unit position using a flat screwdriver [A] as shown.
   If the right side of the trimming area pattern is down by about 1 mm as shown [B], the laser unit should be rotated about one graduation in the direction of the black arrow as shown [C]. If the opposite side is down, adjust in the opposite direction.
   NOTE: The laser unit rotates around the point [D].
7. Tighten the three screws to secure the laser unit.
8. Replace the caps and exposure glass.
9. Print the trimming area pattern to check the image. If it is still the same, repeat steps 2 to 8.

6.12.3 SCANNING

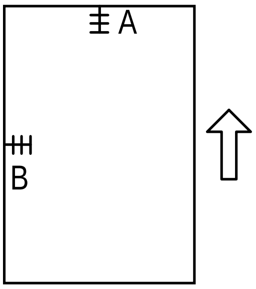
NOTE: 1) Before doing the following scanner adjustments, check the printing registration/side-to-side adjustment and the blank margin adjustment.
2) Use an OS-A3 test chart to perform the following adjustments.

Registration: Platen Mode

1. Place the test chart on the exposure glass and make a copy from one of the feed stations.
2. Check the leading edge and side-to-side registration, and adjust them using the following SP modes if necessary.

	SP mode
Leading Edge	SP4-010
Side-to-side	SP4-011

A: Leading Edge Registration
B: Side-to-side Registration



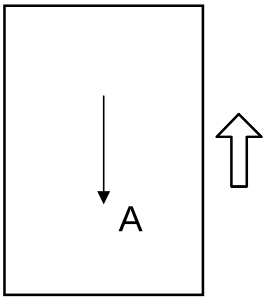
A229R635.WMF

Magnification

NOTE: Use an OS-A3 test chart to perform the following adjustment.

Scanner Sub Scan Magnification

A: Sub Scan Magnification



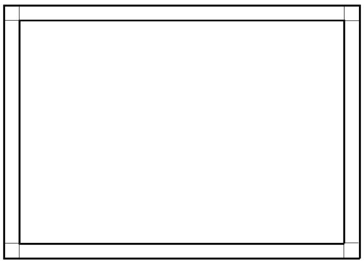
A229R636.WMF

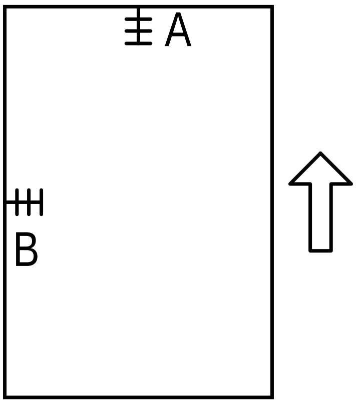
1. Place the test chart on the exposure glass and make a copy from one of the feed stations.
2. Check the magnification ratio, and adjust it using the following SP mode if necessary. The specification is ±1%.

	SP mode
Scanner Sub Scan Magnification	SP4-008

6.12.4 ADF IMAGE ADJUSTMENT

Registration


A229R637.WMF



A229R692.WMF

A: Leading Edge Registration
B: Side-to-side Registration

NOTE: Make a temporary test chart as shown above left using A3/DLT paper.

1. Place the temporary test chart on the ADF and make a copy from one of the feed stations.
2. Check the registration, and adjust using the following SP modes if necessary.

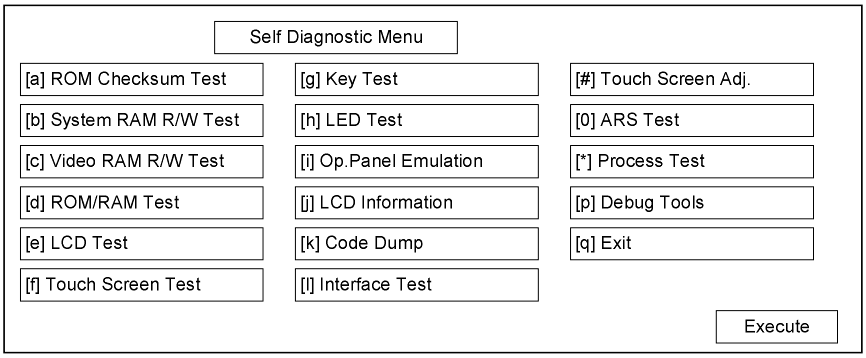
	SP mode
Side-to-side Registration	SP6-006-1
Leading Edge Registration (Thin original mode)	SP6-006-2
Leading Edge Registration (Single-sided/Duplex: front)	SP6-006-3
Leading Edge Registration (Duplex: rear)	SP6-006-4

6.13 TOUCH SCREEN CALIBRATION

After doing a memory all clear or when the touch panel detection mechanism is not working properly, calibrate the touch screen as follows.

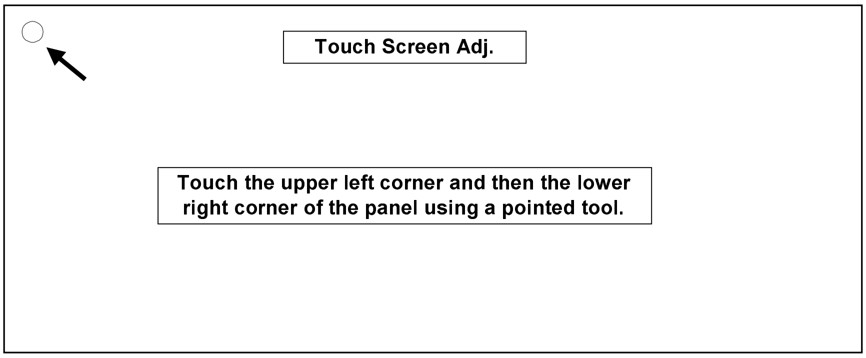
1. Press the following keys in sequence to enter touch screen calibration mode.

[◈/⊘] [1] [9] [9] [3] [C/⊽] x5 (#)


Self Diagnostic Menu
[a] ROM Checksum Test
[b] System RAM R/W Test
[c] Video RAM R/W Test
[d] ROM/RAM Test
[e] LCD Test
[f] Touch Screen Test
[g] Key Test
[h] LED Test
[i] Op.Panel Emulation
[j] LCD Information
[k] Code Dump
[l] Interface Test
[#] Touch Screen Adj.
[0] ARS Test
[*] Process Test
[p] Debug Tools
[q] Exit
Execute

A229R690.WMF

2. The “Self Diagnostics Menu” screen will appear.
   Press the # key to select the “Touch Screen Adj.” Mode.


Touch Screen Adj.

Touch the upper left corner and then the lower right corner of the panel using a pointed tool.

A229R691.WMF

NOTE: Do not execute any of the other items in the self diagnostic menu.

3. The “Touch Screen Adj.” calibration screen will appear. Touch the upper left corner then the lower right corner of the panel using a pointed (but not sharp!) tool.
4. Touch a few spots on the LCD touch panel, and confirm that the marker (a small circle) appears on the screen at exactly the same location as where it is touched. If it does not, touch “Cancel” on the adjustment screen. Then repeat the calibration procedure.
5. Touch “Ok” on the adjustment screen.
6. Touch “[q] Exit” and “Execute” to exit the self diagnostics menu.

7. TROUBLESHOOTING

7.1 SERVICE CALL CONDITIONS

7.1.1 SUMMARY

There are 4 levels of service call conditions.

Level	Definition	Reset Procedure
A	To prevent the machine from being damaged, the SC can only be reset by a service representative (see the note below). The copier cannot be operated at all.	Enter SP mode, then turn the main power switch off and on.
B	The SC can be reset by turning the main power switch off and on if the SC was caused by incorrect sensor detection.	Turn the operation switch or main power switch off and on. A level B' SC can only be reset by turning the main power switch off and on.
C	The copier can be operated as usual except for the unit related to the service call.	Turn the operation switch off and on.
D	The SC history is updated. The machine can be operated as usual.	The SC will not be displayed. All that happens is that the SC history is updated.

NOTE: 1) If the problem concerns electrical circuit boards, first disconnect then reconnect the connectors before replacing the PCBs.
2) If the problem concerns a motor lock, first check the mechanical load before replacing motors or sensors.
3) When a Level A or B SC occurs while in an SP mode, the display does not indicate the SC number. If this occurs, check the SC number after leaving the SP mode. This does not apply to Level B' codes.

7.1.2 SC CODE DESCRIPTIONS

SC101: Exposure lamp error

- Definition - [B]

The standard white level was not detected properly when scanning the white plate.

- Possible cause -

- Exposure lamp defective
- Lamp regulator defective
- Exposure lamp connector defective
- Dirty standard white plate
- Dirty scanner mirror or scanner mirror out of position
- SBU board defective
- SBU connector defective
- Lens block out of position

SC120: Scanner home position error 1

-Definition- [B]

The scanner home position sensor does not detect the on condition during initialization or copying.

- Possible causes -

- Scanner home position sensor defective
- Scanner motor defective
- Scanner motor drive board defective
- Scanner home position sensor connector defective
- Scanner drive motor connector defective

SC121: Scanner home position error 2

-Definition- [B]

The scanner home position sensor does not detect the off condition during initialization or copying.

- Possible causes -

- Scanner home position sensor defective
- Scanner drive motor defective
- Scanner motor drive board defective
- Scanner home position sensor connector defective
- Scanner drive motor connector defective

SC302-01: Charge corona output error 1

-Definition- [B]

The feedback voltage from the charge corona unit is too high.

- Possible causes -

- Charge P.P. defective
- Poor charge corona unit connection

SC302-02: Charge corona output error 2

-Definition- [B]

The control PWM for the charge corona unit is too high.

- Possible causes -

- Charge P.P. defective
- Poor charge corona unit connection

SC302-03: Charge corona output error 3

-Definition- [B]

The control PWM for the charge grid is too high.

- Possible causes -

- Charge P.P. defective
- Poor charge corona unit connection

SC302-04: Charge corona output error 4

-Definition- [B]

The feedback voltage from the charge grid is too high.

- Possible causes -

- Charge P.P. defective
- Poor charge corona unit connection

SC303-01: Charge corona wire cleaner error 1

-Definition- [B]

The charge corona wire cleaner does not return to its home position.

- Possible causes -

- Charge corona wire cleaner motor defective
- Charge P.P. defective
- IOB defective

SC303-02: Charge corona wire cleaner error 2

-Definition- [B]

The charge corona wire cleaner motor connector is not connected.

- Possible causes -

- The charge corona wire cleaner motor connector is not connected.

SC320: Polygon motor error

-Definition- [B]

The polygon motor does not reach its operating speed within 20 seconds after the polygon motor on signal, or the lock signal is still activated for more than 20 seconds after the polygon motor off signal.

- Possible causes -

- Polygon motor defective
- Poor connection between the polygon motor driver and the SBICU board
- SBICU board defective

SC321: No laser writing signal (F-GATE) error 1

- Definition- [B]

The laser writing signal (F-GATE) does not go to LOW for more than 15 seconds after the copy paper reaches the registration sensor.

- Possible causes -

- SBICU board defective
- Poor connection of the printer controller
- Printer controller defective

SC322: 1st laser synchronization error

-Definition- [B’]

The 1st laser synchronization signal cannot be detected by the main scan synchronization detector board even if the laser diodes are activated.

- Possible causes -

- Poor connection between the laser synchronization detector board and the LD unit
- Laser synchronization detector board out of position
- Laser synchronization detector board defective
- LD unit defective

SC323: LD drive current over

-Definition- [B’]

The LD drive board applies more than 110 mA to the LD.

- Possible causes -

- LD unit defective (not enough power, due to aging)
- Poor connection between the LD unit and the SBICU board
- SBICU defective

SC326: 2nd laser synchronization error

-Definition- [B]

The 2nd laser synchronization signal cannot be detected by the main scan synchronization detector board even if the laser diodes are activated.

- Possible causes -

- Poor connection between the laser synchronization detector board and the LD unit
- Laser synchronization detector board out of position
- Laser synchronization detector board defective
- LD unit defective

SC327: LD unit home position error 1

-Definition- [B’]

The LD unit home position sensor does not detect an on condition when the LD unit moves to its home position.

- Possible causes -

- LD unit home position sensor defective
- LD positioning motor defective
- LD unit movement blocked because of incorrect connector routing

SC328: LD unit home position error 2

-Definition- [B’]

The LD unit home position sensor does not detect an off condition when the LD unit moves from its home position.

- Possible causes -

- LD unit home position sensor defective
- LD positioning motor defective
- LD unit movement blocked because of incorrect connector routing

SC329: Laser beam pitch adjustment error

-Definition- [B]

The LD unit home position sensor does not detect an on condition while changing the LD unit position for correcting the LD position or changing the dpi.

- Possible causes -

- The laser beam pitch adjustment (SP2-109-3 and 4) was not done after replacing the NVRAM or doing an NVRAM clear.
- The laser beam pitch adjustment (SP2-109-3 and 4) was not done after replacing the LD unit.
- LD unit movement blocked because of incorrect connector routing

SC350-1: ID sensor error 1

-Definition- [D]

One of the following ID sensor output voltages was detected twice consecutively when checking the ID sensor pattern.

1) $Vsp \geq 2.5V$
2) $Vsp = 0V$

- Possible causes -

- ID sensor defective
- ID sensor connector defective
- Poor ID sensor connector connection
- I/O board (IOB) defective
- Charge or development power pack defective
- Dirty ID sensor
- Defect at ID sensor pattern writing area of the drum

SC350-2: ID sensor error 2

-Definition- [D]

One of the following ID sensor output voltages was detected twice consecutively when checking the ID sensor pattern.

1) $Vsg< 2.5V$
2) $Vsg = 0V$
3) The ID sensor output voltage is 5.0V and the PWM signal input to the ID sensor is 0 when checking the ID sensor pattern

- Possible causes -

- ID sensor defective
- ID sensor connector defective
- Poor ID sensor connector connection
- I/O board (IOB) defective
- Charge or development power pack defective
- Dirty ID sensor
- Defect at the ID sensor pattern writing area of the drum

SC350-3: ID sensor error 3

-Definition- [D]

For 2 s during the ID sensor pattern check, the ID sensor pattern edge voltage is not 2.5V.

- Possible causes -

- ID sensor defective
- ID sensor connector defective
- Poor ID sensor connector connection
- I/O board (IOB) defective
- Charge or development power pack defective
- Dirty ID sensor
- Defect at the ID sensor pattern writing area of the drum

SC350-4: ID sensor error 4

-Definition- [D]

One of the following ID sensor output voltages is detected at ID sensor initialization.

1) Vsg < 4.0V when the maximum PWM input (255) is applied to the ID sensor.
2) Vsg ≥ 4.0V when the minimum PWM input (0) is applied to the ID sensor.

- Possible causes -

- ID sensor defective
- ID sensor connector defective
- Poor ID sensor connector connection
- I/O board (IOB) defective
- Charge or development power pack defective
- Dirty ID sensor
- Defect at the ID sensor pattern writing area of the drum

SC350-5: ID sensor error 5

-Definition- [D]

Vsg falls out of the adjustment target (4.0 ± 0.2V) during Vsg checking.

- Possible causes -

- ID sensor defective
- ID sensor connector defective
- Poor ID sensor connector connection
- I/O board (IOB) defective
- Charge or development power pack defective
- Dirty ID sensor
- Defect at the ID sensor pattern writing area of the drum

SC360: Hard disk drive error 1

-Definition- [B]

The machine does not detect the connection signal from the HDD.

- Possible causes -

- Poor connection between the HDD and SBICU
- The dc power connector to the HDD is disconnected
- HDD defective
- SBICU defective

SC361: Hard disk drive error 2

-Definition- [B]

The image data stored in the HDD cannot be output properly.

- Possible causes –

- When this SC occurs only once, this problem will be solved after turning the main power switch off and on.
- When this SC occurs while performing SP4-911-1 (HDD media check), it can be cured by doing SP4-911-2 (HDD formatting).
- HDD defective

SC362: IMAC (image compression IC) error

-Definition- [B]

An error occurs during image processing in the IMAC, which handles image compression and image data transmission.

- Possible causes -

- SBICU defective

SC365: Image storage address error

-Definition- [B]

The SBICU receives an image data output request signal for data that is not stored in memory.

- Possible causes -

- SBICU defective

SC370-01: Potential sensor error 1

Definition- [D]

When calibrating the drum potential sensor at the process control initial setting, the drum potential sensor output voltage is out of specification.

- Possible causes -

- Potential sensor defective
- Poor connection between the potential sensor and the I/O board (IOB)
- IOB defective
- Poor connection between the drum unit and the I/O board (IOB)
- Development power pack defective

SC370-02: Potential sensor error 2

Definition- [D]

When calibrating the drum potential sensor at the process control initial setting, the rate of change of drum potential sensor output with voltage on the drum is out of specification.

- Possible causes -

- Potential sensor defective
- Poor connection between the potential sensor and the I/O board (IOB)
- IOB defective
- Poor connection between the drum unit and the I/O board (IOB)
- Development power pack defective

SC370-03: Potential sensor error 3

Definition- [D]

When adjusting V_G for the unexposed drum during process control initial setting, –1000V is applied to the charge grid, the drum potential sensor should detect a V_D of about -900 V, but detects that V_D is more than -970 V.

- Possible causes -

- Potential sensor defective
- Poor connection between the potential sensor and the I/O board (IOB)
- IOB defective
- Poor connection between the drum unit and the I/O board (IOB)
- Development power pack defective
- Dirty or worn charge corona wire

SC370-04: Potential sensor error 4

Definition- [D]

When adjusting the drum potential (V_D) at the process control initial setting, the drum potential sensor detects that V_D is more than V_G (grid voltage).

- Possible causes -

- Potential sensor defective
- Poor connection between the potential sensor and the I/O board (IOB)
- IOB defective
- Poor connection between the drum unit and the I/O board (IOB)
- Development power pack defective
- Dirty or worn charge corona wire

SC370-05: Potential sensor error 5

Definition- [D]

When adjusting the drum potential (V_H) for LD power adjustment during the process control initial setting, the first time the V_H pattern is made, the drum potential sensor detects that V_H is more than 500V.

- Possible causes -

- Potential sensor defective
- Poor connection between the potential sensor and the I/O board (IOB)
- IOB defective
- Poor connection between the drum unit and the I/O board (IOB)
- LD unit defective

SC370-06: Potential sensor error 6

Definition- [D]

When adjusting V_G for the unexposed drum during process control initial setting, –1000V is applied to the charge grid, the drum potential sensor should detect a V_D of about -900 V. However, the drum potential sensor detects that V_D does not become – 900 + 10 V after 5 attempts.

- Possible causes -

- Potential sensor defective
- Poor connection between the potential sensor and the I/O board (IOB)
- IOB defective
- Poor connection between the drum unit and the I/O board (IOB)
- Development power pack defective

SC370-07: Potential sensor error 7

Definition- [D]

When adjusting the drum potential (V_H) for half tone at the process control initial setting, the drum potential sensor detects that V_H does not become –300 + 20 V even though the LD power has been changed twenty times.

- Possible causes -

- Potential sensor defective
- Poor connection between the potential sensor and the I/O board (IOB)
- IOB defective
- Poor connection between the drum unit and the I/O board (IOB)
- LD unit defective
- Poor drum cleaning

SC390-1: TD sensor error 1

-Definition- [B]

The TD sensor output voltage is less than 0.5V or more than 4.0V 10 times consecutively during copying.

- Possible causes -

- TD sensor defective
- Poor connection between the TD sensor and the I/O board (IOB)
- I/O board (IOB) defective

SC390-2: TD sensor error 2

-Definition- [B]

One of the following TD sensor output voltages is detected during TD sensor initial setting.

1) Less than 2.5V when the maximum PWM (255) is applied to the TD sensor.
2) 2.5V or more when minimum PWM (0) is applied to the TD sensor.

- Possible causes -

- TD sensor defective
- Poor connection between the TD sensor and the I/O board (IOB)
- I/O board (IOB) defective

SC390-3: TD sensor error 3

-Definition- [B]

The TD sensor output voltage is not adjusted to 2.5 + 0.1V within 20 s during TD sensor initial setting.

- Possible causes -

- TD sensor defective
- Poor connection between the TD sensor and the I/O board (IOB)
- I/O board (IOB) defective

SC391: Development bias leak

-Definition- [B]

A development bias leak signal is detected.

- Possible causes -

- Poor connection between the development bias terminal and the development P.P.
- Development P.P. defective

SC401-1: Transfer roller leak error

-Definition- [B]

A transfer roller current leak signal is detected.

- Possible causes -

- Transfer P.P. defective
- Poor connection between the transfer current terminal and the transfer P.P.

SC401-2: Transfer roller open error

-Definition- [B]

The transfer roller current feedback signal is not detected.

- Possible causes -

- Transfer P.P. defective
- Poor connection between the transfer current terminal and the transfer P.P.

SC430: Quenching lamp error

-Definition- [D]

When finishing the process control initial setting, the drum potential which is detected by the drum potential sensor is out of the normal range.

- Possible causes -

- Quenching lamp defective
- Poor connection between quenching lamp and charge power pack

SC440: Drum motor lock

-Definition- [B]

The drum motor lock signal is longer than 2 seconds while the drum motor is on.

- Possible causes -

- Too much load on the drive mechanism
- Drum motor defective
- Poor drum motor connector connection
- Interface board defective

SC441: Development motor lock

-Definition- [B]

The development motor lock signal is longer than 2 seconds while the development motor is on.

- Possible causes -

- Too much load on the drive mechanism
- Development motor defective
- Poor drum motor connector connection
- Interface board defective

SC491: Polygonal mirror cooling fan motor lock

-Definition- [B]

The polygonal mirror cooling fan motor lock signal is longer than 5 seconds while the polygonal mirror cooling fan motor is on.

- Possible causes -

- Too much load on the drive mechanism
- Polygonal mirror cooling fan motor defective
- Poor drum motor connector connection

SC495: Toner recycling unit error

-Definition- [B]

The toner recycling sensor output signal does not change within 500 ms when the drum motor turns on.

- Possible causes -

- Too much load on the drive mechanism
- Toner recycling clutch defective
- Toner recycling clutch connector connection
- Toner recycling sensor connector connection

SC496: Toner collection bottle error

-Definition- [B]

The toner collection bottle set switch remains off.

- Possible causes -

- No toner collection bottle
- Toner collection bottle switch defective

SC497: Toner recycling motor error

-Definition- [B]

The toner recycling motor connector set signal remains off.

- Possible causes -

- The toner recycling motor connector is disconnected.

SC501: 1st tray lift malfunction

-Definition- [C]

One of following conditions is detected in the 1st tray.

1) The 1st lift sensor is not activated after the tray lift motor has been on for 10 seconds.
2) The 1st lift sensor is already activated when the 1st tray is placed in the machine.

- Possible causes -

- 1st lift sensor defective
- 1st tray lift motor defective
- Poor 1st tray lift motor connection

SC502: 2nd tray lift malfunction

-Definition- [C]

One of following conditions is detected in the 2nd tray.

1) The 2nd lift sensor is not activated after the tray lift motor has been on for 10 seconds.
2) The 2nd lift sensor is already activated when the 2nd tray is placed in the machine.

- Possible causes -

- 2nd lift sensor defective
- 2nd tray lift motor defective
- Poor 2nd tray lift motor connection

SC503: 3rd tray lift malfunction

-Definition- [C]

One of following conditions is detected in the 3rd tray.

1) The 3rd lift sensor is not activated after the tray lift motor has been on for 10 seconds.
2) The 3rd lift sensor is already activated when the 3rd tray is placed in the machine.

- Possible causes -

- 3rd lift sensor defective
- 3rd tray lift motor defective
- Poor 3rd tray lift motor connection

SC506: Paper feed motor lock

-Definition- [C]

A paper feed motor lock signal is detected for more than 50 ms during rotation.

- Possible causes -

- Paper feed motor defective
- Too much load on the drive mechanism
- Poor paper feed motor connector connection

SC507: LCT motor lock (optional LCT)

-Definition- [C]

A main motor lock signal is detected for more than 50 ms during rotation.

- Possible causes -

- LCT motor defective
- Too much load on the drive mechanism
- Poor motor connector connection

SC508: Tandem rear fence motor error

-Definition- [C]

One of following conditions is detected in the tandem tray.

1) When the tray is placed in the machine, the rear fence return sensor and the rear fence HP sensor are already on.
2) It takes 10 seconds or more for the rear fence return sensor to detect the on condition after the rear fence motor starts.
3) It takes 10 seconds or more for the rear fence HP sensor to detect the on condition after this fence starts moving to the home position.

- Possible causes -

- Rear fence motor defective
- Too much load on the drive mechanism
- Poor motor connector connection

SC509: Tandem side fence motor error 1

-Definition- [C]

One of following conditions is detected in the tandem tray.

1) When the side fence motor turns on to open the side fence, the side fence positioning sensor does not detect an on condition for 2 seconds or more.
2) When the side fence motor turns on to close the side fence, the side fence close sensor does not detect an on condition for 2 seconds or more.

- Possible causes -

- Side fence motor defective
- Too much load on the drive mechanism
- Poor motor connector connection

SC510: LCT tray malfunction (optional LCT)

-Definition- [C]

1) The LCT lift sensor does not activate for more than 18 seconds after the LCT motor starts to lift the bottom plate.
2) The LCT down sensor does not activate for more than 18 seconds after the LCT motor starts to lower the bottom plate.
3) The LCT lift sensor is already activated when the LCT cover is closed after paper is loaded.
4) During paper lifting, the LCT lift sensor does not activate for more than 2.5 seconds after the paper end sensor turned on.

- Possible causes -

- LCT lift motor defective
- Pick-up solenoid defective
- Poor motor connector connection
- Poor pick-up solenoid connector connection
- Paper end sensor defective
- LCT lift sensor defective
- LCT lower limit sensor defective

SC511: Tandem side fence motor error 2

-Definition- [C]

When the side fence motor turns on to close the side fence, the side fence close sensor does not detect an on condition for 2 seconds or more.

- Possible causes -

- Side fence motor defective
- Too much load on the drive mechanism
- Poor motor connector connection

SC521-1: Duplex jogger motor error 1

-Definition- [C]

When the jogger fence moves to the home position, the jogger HP sensor does not turn on even if the jogger fence motor has moved the jogger fence 153.5 mm.

- Possible causes -

- Jogger fence motor defective
- Too much load on the drive mechanism
- Poor motor connector connection

SC521-2: Duplex jogger motor error 2

-Definition- [C]

When the jogger fence moves from the home position, the jogger fence HP sensor does not turn off even if the jogger motor has moved the jogger fence 153.5 mm.

- Possible causes -

- Jogger fence motor defective
- Too much load on the drive mechanism
- Poor motor connector connection

SC530: By-pass feed motor lock

-Definition- [C]

A by-pass feed motor lock signal is detected for more than 20s during rotation.

- Possible causes -

- By-pass feed motor defective
- Too much load on the drive mechanism
- Poor by-pass feed motor connector connection
- IOB defective

SC531: Fusing/duplex motor lock

-Definition- [C]

A fusing/duplex motor lock signal is detected for more than 2s during rotation.

- Possible causes -

- Fusing/duplex motor defective
- Too much load on the drive mechanism
- Poor fusing/duplex motor connector connection
- IOB defective

SC541: Fusing thermistor open

-Definition- [A]

The fusing temperature detected by the thermistor was below 7°C for 16 seconds.

- Possible causes -

- Fusing thermistor defective or out of position
- Poor thermistor terminal connection

SC542: Fusing temperature warming-up error

-Definition- [A]

The fusing temperature does not reach the fusing standby temperature within 5 minutes after the main power switch is turned on.

- Possible causes -

- Fusing thermistor defective or out of position
- Fusing lamp open
- Fusing thermofuse open
- SBICU defective
- Power supply board defective
- Poor fusing unit connection

SC543: Fusing overheat error 1

-Definition- [A]

A fusing temperature of over 231°C is detected for 5 seconds by the fusing thermistor.

- Possible causes -

- Fusing thermistor defective
- SBICU defective
- I/O board (IOB) defective

SC545: Fusing overheat error 2

-Definition- [A]

The fusing lamp stays on at full power for 45 seconds while in the stand-by condition after warming-up is completed.

- Possible causes -

- Fusing thermistor out of position

SC546: Fusing ready temperature malfunction

-Definition- [A]

The fusing temperature goes 20 °C below or 20 °C over the stand-by temperature after warm-up is completed.

- Possible causes -

- Poor thermistor connector connection
- Poor fusing unit connection

SC547: Zero cross signal malfunction

-Definition- [A]

Zero cross signals are not detected within a certain period after the main power switch has been turned on.

- Possible causes -

- Power supply board defective
- Noise on the ac power line

SC590: Toner collection motor error

-Definition- [B]

The toner collection motor sensor output does not change for 3 seconds while the toner collection motor is on.

- Possible causes -

- Toner collection motor defective
- Too much load on the drive mechanism
- Poor toner collection motor connector connection
- IOB defective
- Toner collection motor sensor defective

SC601: Communication error between SBICU and SBU

-Definition- [B’]

The SBICU cannot communicate with the SBU board properly.

- Possible causes -

- Poor connection between the SBICU and SBU
- SBU defective
- SBICU defective

SC602: Communication error between SBICU and HDD controller

-Definition- [B]

The SBICU cannot communicate with the HDD controller properly.

- Possible causes -

- Poor connection between the SBICU board and HDD control board
- SBICU board defective

SC620-1: Communication error between SBICU and ADF 1

-Definition- [B]

The TXD and RXD signals between SBICU and ADF main board do not stabilize.

- Possible causes -

- Poor connection between the SBICU board and ADF main board
- Noise on interface cable

SC620-2: Communication error between SBICU and ADF 2

-Definition- [B]

The TXD and RXD signals between SBICU and ADF main board do not stabilize.

- Possible causes -

- Poor connection between the SBICU board and ADF main board
- ADF main board defective
- SBICU board defective

SC620-3: Communication error between SBICU and ADF 3

-Definition- [B]

Software error after abnormal user operation.

- Possible causes -

- Software error

SC621: Communication error between SBICU and finisher

-Definition- [B]

The SBICU cannot communicate with the finisher properly.

- Possible causes -

- Poor connection between the SBICU board and the finisher main board
- Finisher main board defective
- SBICU board defective
- Noise on interface cable

SC623: Communication error between SBICU and paper feed board

-Definition- [B]

The SBICU cannot communicate with the paper feed board properly.

- Possible causes -

- Poor connection between the SBICU board and the paper feed board
- Paper feed board defective
- SBICU board defective
- Noise on interface cable

SC624: Communication error between SBICU and LCT

-Definition- [B]

The SBICU cannot communicate with the LCT properly.

- Possible causes -

- Poor connection between the SBICU board and the LCT interface board
- LCT interface board defective
- SBICU board defective
- Noise on interface cable

SC630: CSS (RSS) communication error between line adapter and CSS center

Japan only

SC700: ADF original pick-up malfunction

-Definition- [B]

The pick-up roller H.P sensor signal does not change after the pick-up motor has turned on.

- Possible causes -

- Pick-up roller H.P sensor defective
- Pick-up motor defective
- Timing belt out of position
- ADF main board defective

SC701: ADF original table lift-up malfunction

-Definition- [B’]

The bottom plate position sensor does not activate when the original table motor lifts the original table.

- Possible causes -

- Bottom plate H.P sensor defective
- Bottom plate motor defective
- ADF main board defective
- Bottom plate position sensor defective

SC722: Finisher jogger motor error

-Definition- [B]

1) The finisher jogger H.P sensor remains de-activated for more than a certain time when returning to home position.
2) The finisher jogger H.P sensor remains activated for more than a certain time when moving away from home position.

- Possible causes -

- Jogger H.P sensor defective
- Jogger motor defective

SC724: Finisher staple hammer motor error

-Definition- [B]

Stapling does not finish within a certain time after the staple hammer motor turned on.

- Possible causes -

- Staple hammer motor defective
- Staple jam

SC725: Finisher stack feed-out motor error

- Definition - [B]

The stack feed-out belt H.P sensor does not activate within a certain time after the stack feed-out motor turned on.

- Possible causes -

- Stack feed-out H.P sensor defective
- Stack feed-out motor defective

SC726: Finisher shift/lift motor error

- Definition - [B]

1) Tray shift does not finish within a certain time after the shift motor turned on.
2) The stack height sensor does not activate within a certain time after the shift tray lift motor turned on.

- Possible causes -

- Shift motor defective
- Shift tray lift motor defective

SC727: Finisher stapler rotation motor error

- Definition - [B]

1) Stapler rotation does not finish within a certain time after the stapler rotation motor turned on.
2) The stapler does not return to its home position within a certain time after stapling finished.

- Possible causes -

- Stapler rotation motor defective
- Poor stapler rotation motor connection

SC729: Finisher punch motor error

- Definition - [B]

The punch H.P sensor does not activate within a certain time after the punch motor turned on.

- Possible causes -

- Punch motor defective
- Punch H.P sensor defective
- Poor punch motor connection

SC730: Finisher stapler position motor error

- Definition - [B]

1) The stapler H.P. sensor stays on for longer than normal when the stapler motor turns on to return the stapler to its home position.
2) The stapler H.P sensor does not turn on within a certain time after the stapler motor turned on to move the stapler away from home position.

- Possible causes -

- Stapler motor defective
- Stapler H.P sensor defective
- Poor stapler motor connection

SC900: Electrical total counter error

-Definition- [A]

The total counter contains something that is not a number.

- Possible causes -

- NVRAM defective

SC951: F-gate signal error 2

-Definition- [B']

When the IPU has already received the F-gate signal (laser writing start trigger signal), the IPU receives another F-gate signal.

- Possible causes -

- SBICU defective

SC953: Scanner image setting error

-Definition- [B']

The settings that are required for image processing using the scanner are not sent from the IPU.

- Possible causes -

- Software defective

SC954: Printer image setting error

-Definition- [B']

The settings that are required for image processing using the printer controller are not sent from the IPU.

- Possible causes -

- Software defective

SC955: Memory setting error

-Definition- [B']

The settings that are required for image processing using the memory are not sent from the IPU.

- Possible causes -

- Software defective

SC959: Printer setting ID error

-Definition- [B']

The ID that is required for image processing using the printer is not sent from the IPU.

- Possible causes -

- Software defective

SC960: Printer return ID error

-Definition- [B']

The ID that is sent from the printer controller after finishing the printout is incorrect.

- Possible causes -

- Software defective

SC961: Printer ready ID error

-Definition- [B']

The ID that is sent from the printer controller in the printer controller printing ready condition is incorrect.

- Possible causes -

- Software defective

SC962: Memory setting ID error

-Definition- [B']

The ID that is sent from the memory when the IPU sent the memory ready signal is incorrect.

- Possible causes -

- Software defective

SC963: Memory finishing ID error

-Definition- [B']

The ID that is sent from the memory when the IPU sent the memory finish signal is incorrect.

- Possible causes -

- Software defective

SC964: Printer ready error

-Definition- [B’]

The print ready signal is not generated for more than 17 seconds after the IPU received the print start signal.

- Possible causes -

- Software defective

SC980: HDD access error

-Definition- [B]

Incorrect parameter sent to the HDD controller.

- Possible causes -

- Software defective
- SBICU defective

SC981: HDD response error

-Definition- [B’]

The HDD controller does not generate any response when the IPU sends a read/write signal to the HDD controller.

- Possible causes -

- Software defective
- HDD defective

SC982: HDD construction error

-Definition- [B’]

A HDD that does not have the correct specifications has been installed.

- Possible causes -

- Hard disk defective
- Incorrect hard disk type

SC990: Software performance error

-Definition- [B']

The software performs an unexpected function.

- Possible causes -

- Software defective

NOTE: When this SC occurs, the file name, address, and data will be stored in the NVRAM. These data can be checked by entering SP mode then pressing “0”.

Note the above data and the situation in which this SC occurs. Then report the data and conditions to your technical control center

7.2 ELECTRICAL COMPONENT DEFECTS

7.2.1 SENSORS

Component (Symbol)	CN	Condition	Symptom
Scanner Home Position (S1)	CN312-7 (SBICU)	Stays On	SC121 is displayed.
		Stays Off	SC120 is displayed.
Original Width (S2)	CN312-4.5.6 (SBICU)	Stays On	The CPU cannot detect the original size properly. APS and ARE do not function correctly.
		Stays Off	The CPU cannot detect the original size properly. APS and ARE do not function correctly.
Original Length-1 (S3)	CN305-7 (SBICU)	Stays On	The CPU cannot detect the original size properly. APS and ARE do not function correctly.
		Stays Off	The CPU cannot detect the original size properly. APS and ARE do not function correctly.
Original Length-2 (S4)	CN314-3 (SBICU)	Stays On	The CPU cannot detect the original size properly. APS and ARE do not function correctly.
		Stays Off	The CPU cannot detect the original size properly. APS and ARE do not function correctly.
LD Unit Home Position (S5)	CN218-8 (IOB)	Stays On	SC328 is displayed when the laser beam pitch is changed.
		Stays Off	SC327 is displayed when the laser beam pitch is changed.
Drum Potential Sensor (S6)	CN206-A12 (IOB)	Open	The machine quits auto process control and enters fixed toner supply mode.
		Shorted	
Toner Density (TD) (S7)	CN211-B6 (IOB)	Stays On	SC390-01 is displayed.
		Stays Off	SC390-01 is displayed.
Image Density (ID) (S8)	CN206-B11 (IOB)	Open	SC350-03 is displayed after copying.
		Shorted	SC350-01 is displayed after copying.
Toner End (S9)	CN211-B2 (IOB)	Open	“Toner End” is displayed even if there is enough toner in the toner hopper.
		Shorted	“Toner End” is not displayed even if there is no toner in the toner hopper.
Toner Collection Motor (S10)	CN268-7 (PFB)	Stays On	SC495 is displayed.
		Stays Off	SC495 is displayed.
Recycle Toner (S11)	CN207-B2 (IOB)	Stays On	SC495 is displayed.
		Stays Off	SC495 is displayed.

Component (Symbol)	CN	Condition	Symptom
1st Paper Feed (S12)	CN269-A2 (PFB)	Stays On	"Paper Jam" is displayed even if there is no paper.
		Stays Off	"Paper Jam" is displayed whenever a copy is made.
2nd Paper Feed (S13)	CN269-B2 (PFB)	Stays On	"Paper Jam" is displayed even if there is no paper.
		Stays Off	"Paper Jam" is displayed whenever a copy is made.
3rd Paper Feed (S14)	CN270-2 (PFB)	Stays On	"Paper Jam" is displayed even if there is no paper.
		Stays Off	"Paper Jam" is displayed whenever a copy is made.
1st Lift (S15)	CN269-A8 (PFB)	Stays On	SC501 is displayed.
		Stays Off	SC501 is displayed.
2nd Lift (S16)	CN269-B8 (PFB)	Stays On	SC502 is displayed.
		Stays Off	SC502 is displayed.
3rd Lift (S17)	CN270-8 (PFB)	Stays On	SC503 is displayed.
		Stays Off	SC503 is displayed.
1st Paper End (S18)	CN269-A5 (PFB)	Stays On	"Paper End" is displayed even if there is paper in the 1st paper tray.
		Stays Off	"Paper End" is not displayed even if there is no paper in the 1st paper tray.
2nd Paper End (S19)	CN269-B5 (PFB)	Stays On	"Paper End" is displayed even if there is paper in the 2nd tray.
		Stays Off	"Paper End" is not displayed even if there is no paper in the 2nd tray.
3rd Paper End (S20)	CN270-5 (PFB)	Stays On	"Paper End" is displayed even if there is paper in the 3rd tray.
		Stays Off	"Paper End" is not displayed even if there is no paper in the 3rd tray.
By-pass Paper End (S21)	CN211-A5 (IOB)	Stays On	"Paper End" is displayed even if there is paper in the by-pass tray.
		Stays Off	"Paper End" is not displayed even if there is no paper in the by-pass tray.
1st Near End (S22)	CN262-2 (PFB)	Stays On	"Paper Near End" is not displayed even if the tray is almost empty.
		Stays Off	"Paper Near End" is displayed even if there is enough paper in the paper tray.
2nd Near End (S23)	CN262-5 (PFB)	Stays On	"Paper Near End" is not displayed even if the tray is almost empty.
		Stays Off	"Paper Near End" is displayed even if there is enough paper in the paper tray.

Component (Symbol)	CN	Condition	Symptom
3rd Near End (S24)	CN263-2 (PFB)	Stays On	“Paper Near End” is not displayed even if the tray is almost empty.
		Stays Off	“Paper Near End” is displayed even if there is enough paper in the paper tray.
Rear Fence HP (S25)	CN264-B6 (PFB)	Stays On	SC508 is displayed
		Stays Off	SC508 is displayed
Rear Fence Return (S26)	CN264-B10 (PFB)	Stays On	SC508 is displayed
		Stays Off	SC508 is displayed
Side Fence Close (S27)	CN264-A7 (PFB)	Stays On	SC511 is displayed
		Stays Off	SC509 is displayed
Side Fence Position (S28)	CN264-A14 (PFB)	Stays On	SC511 is displayed
		Stays Off	SC509 is displayed
Base Plate Down (S29)	CN264-A11 (PFB)	Stays On	The bottom plate is not lowered when paper in the tray shifts to the right tray. SC511 will be displayed.
		Stays Off	The bottom plate lift lever locks at the lowest position.
Left Tandem Tray Paper End (S30)	CN264-B12 (PFB)	Stays On	The paper in the left tray is not moved to the right tray.
		Stays Off	The rear fence moves back and forward continuously.
3rd Tray Paper (S31)	CN274-12 (PFB)	Stays On	The bottom plate does not rise even if there is paper in the tray.
		Stays Off	The bottom plate rises and falls even if there is no paper.
Tray Down (S32)	CN274-5 (PFB)	Stays On	When the bottom plate lowers, it locks at the lowest position. (SC510)
		Stays Off	“Paper End” is displayed even if there is paper in the tray.
Duplex Entrance (S33)	CN208-B14 (IOB)	Stays On	“Paper Jam” is displayed even if there is no paper.
		Stays Off	“Paper Jam” is displayed whenever a copy is made.
Duplex Transport 1 (S34)	CN208-B5 (IOB)	Stays On	“Paper Jam” is displayed whenever a copy is made.
		Stays Off	“Paper Jam” is displayed even if there is no paper.
Duplex Transport 2 (S35)	CN208-B11 (IOB)	Stays On	“Paper Jam” is displayed whenever a copy is made.
		Stays Off	“Paper Jam” is displayed even if there is no paper.

Component (Symbol)	CN	Condition	Symptom
Duplex Transport 3 (S36)	CN208-B11 (IOB)	Stays On	“Paper Jam” is displayed whenever a copy is made.
		Stays Off	“Paper Jam” is displayed even if there is no paper.
Duplex Jogger HP (S37)	CN208-B2 (IOB)	Stays On	SC521-02 is displayed.
		Stays Off	SC521-01 is displayed.
Relay (S38)	CN211-A1 (IOB)	Stays On	“Paper Jam” is displayed even if there is no paper.
		Stays Off	“Paper Jam” is displayed whenever a copy is made.
Registration (S39)	CN211-A2 (IOB)	Stays On	“Paper Jam” is displayed even if there is no paper.
		Stays Off	“Paper Jam” is displayed whenever a copy is made.
Guide Plate Position (S40)	CN209-6 (IOB)	Stays On	A paper jam will occur when the guide plate is opened.
		Stays Off	“Guide Plate Close” is displayed after the front door is closed even if the guide plate is closed.
Fusing Exit (S41)	CN204-B2 (IOB)	Stays On	“Paper Jam” is displayed whenever a copy is made.
		Stays Off	“Paper Jam” is displayed even if there is no paper.
Paper Exit (S42)	CN204-B5 (IOB)	Stays On	“Paper Jam” is displayed whenever a copy is made.
		Stays Off	“Paper Jam” is displayed even if there is no paper.
Tray Paper Limit (S43)	CN204-B8 (IOB)	Stays On	Paper jams may occur.
		Stays Off	“Paper Full on Exit Tray” is displayed.

NOTE: “Stays on” means that the actuator is in the sensor for a photointerrupter.

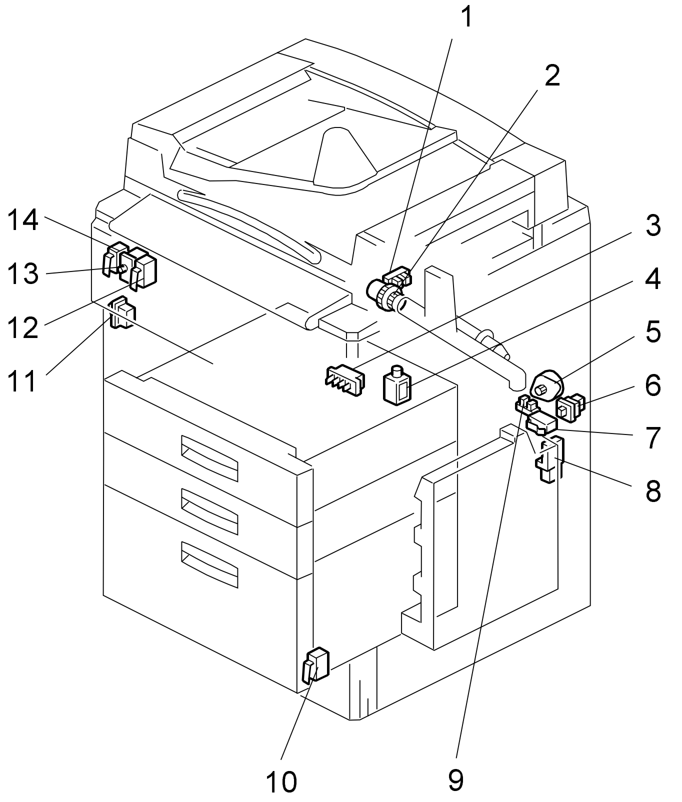
7.2.2 SWITCHES

Component (Symbol)	CN	Condition	Symptom
Main Power (SW1)	CN100-1,2,3,4 (PSU)	Open	The machine does not turn on.
		Shorted	The machine does not turn off.
Front Door Safety (SW3,5)	CN103-1,2 (LDDR)	Open	SC322 is displayed.
		Shorted	-
Front Door Safety (SW4)	CN152-1,2,3,4,5,6 (I/F Board)	Stays On	"Close the Door" is displayed even if the front cover is closed. SC440, 441, or 531 is displayed.
		Stays Off	"Close the Door" is not displayed even if the front cover is opened.
Lower Front Door Safety (SW6)	CN266-1,3 (PFB)	Open	SC506 is displayed.
		Shorted	-
Toner Collection Bottle (SW7)	CN268-10 (PFB)	Open	SC 496 is displayed.
		Shorted	No caution is displayed on the operation panel even if the toner collection bottle is set incorrectly.
Toner Overflow (SW8)	CN268-12 (PFB)	Open	"Full Used Toner Bottle" is displayed even if the toner collection bottle is not full.
		Shorted	"Full Used Toner Bottle" is not displayed even if the toner collection bottle is full.
Paper Size (SW9)	CN262-7,8,9,10,11,12 (PFB)	Open	The CPU cannot detect the proper paper size, and misfeeds may occur when a copy is made.
		Shorted	
3rd Tray Down (SW10)	CN274-2 (PFB)	Open	The 3rd tray bottom plate stays at its lowest position.
		Shorted	The 3rd tray bottom plate stays at its highest position.
By-pass Tray (SW11)	CN211-B8 (IOB)	Open	"Open the by-pass tray" is displayed even if the by-pass tray is open.
		Shorted	-

7.3 BLOWN FUSE CONDITIONS

Fuse	**Rating**		**Symptom when turning on the main power switch**
	115V	210 ~ 230V	
Power Supply Board			
FU101	12A/125V	6.3A/250V	No response
FU102	6.3A/125V	6.3A/125V	SC521-02 is displayed.
FU103	6.3A/125V	6.3A/125V	SC391 and “Paper Jam” are displayed.
FU104	6.3A/125V	6.3A/125V	SC401-02 is displayed after the print key is pressed.
FU105	6.3A/125V	6.3A/125V	The ADF does not work.
FU106	6.3A/125V	6.3A/125V	SC121 is displayed.
FU107	6.3A/125V	6.3A/125V	If the 1st tray is selected, SC501 is displayed. If the 2nd tray is selected, SC502 is displayed.
FU108	4A/125V	4A/125V	No display on the operation panel.
FU109	2A/125V	2A/125V	“Please wait” remains in the display.
FU110	5A/125V	5A/125V	No display on the operation panel and the scanner motor keeps returning the scanner to home position.
FU111	5A/125V	5A/125V	No response
FU112	2A/125V	2A/125V	SC401-01 is displayed after the Print key is pressed.
FU113	5A/125V	5A/125V	The machine continuously shuts down and restarts.
FU114	5A/125V	5A/125V	SC401-02 is displayed after the Print key is pressed.
FU115	5A/125V	5A/125V	SC401-02 is displayed after the Print key is pressed.
FU116	6.3A/125V	6.3A/125V	SC401-02 is displayed after the Print key is pressed.

COPIER (A229) ELECTRICAL COMPONENT LAYOUT (1/2)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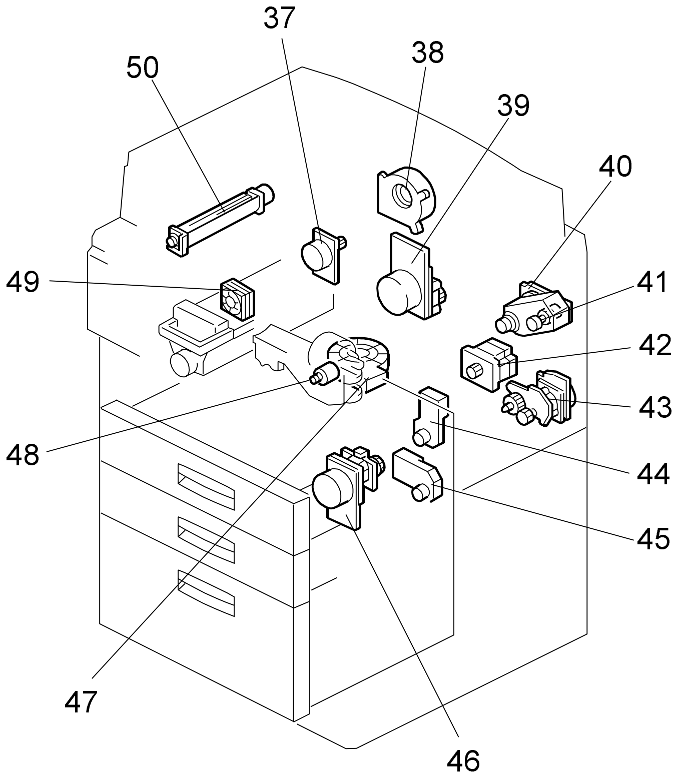
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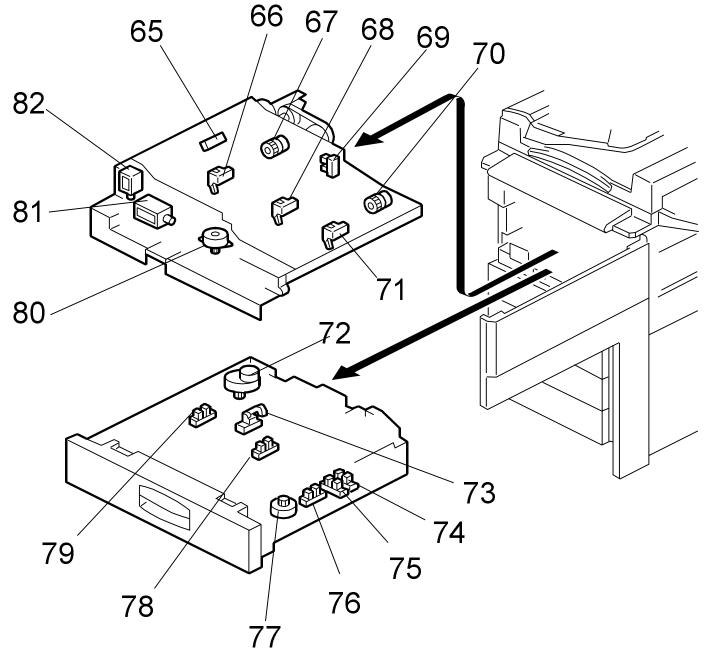
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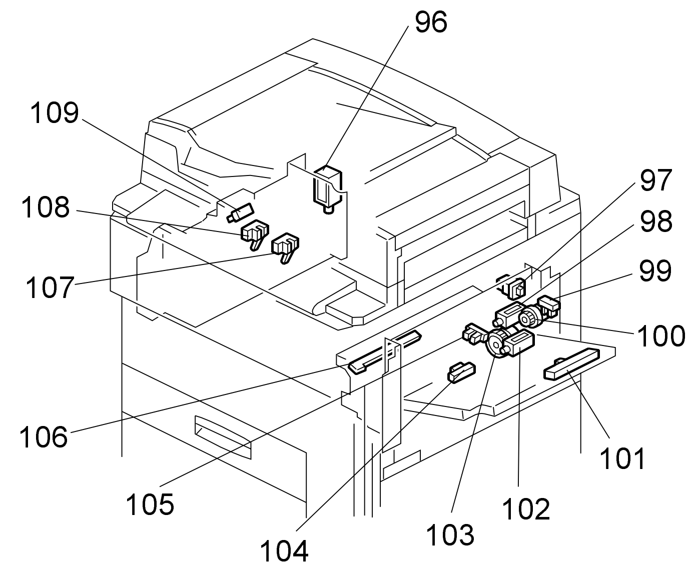
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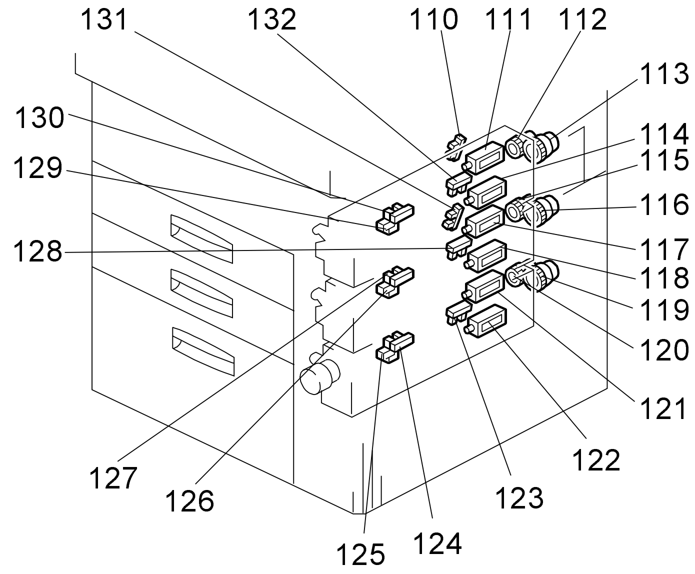
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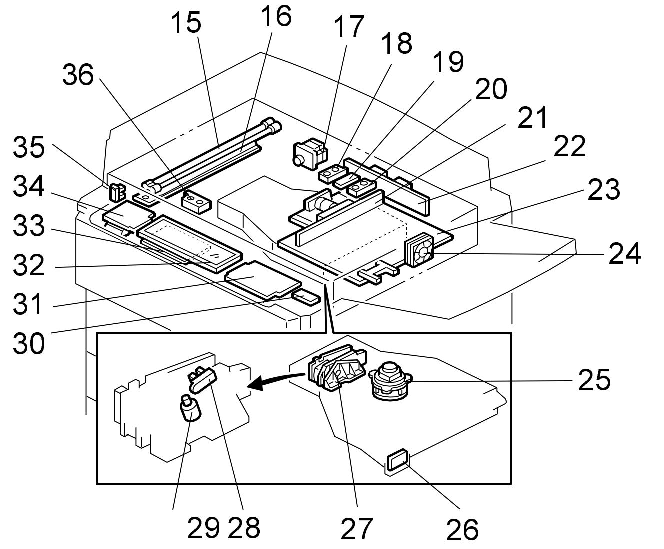
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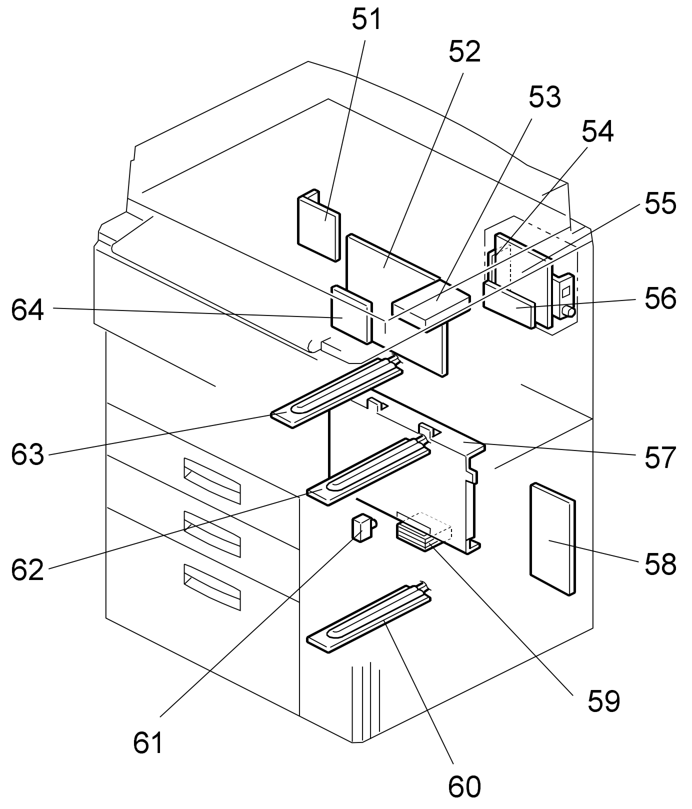
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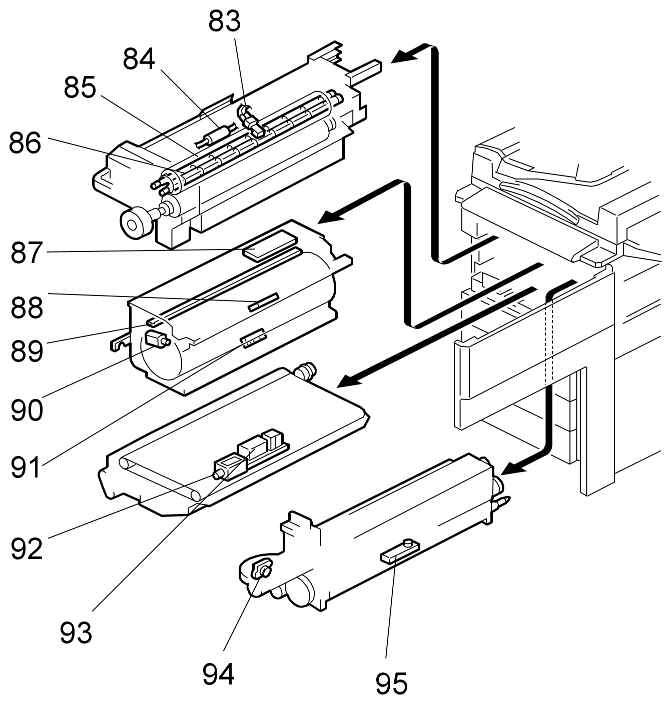
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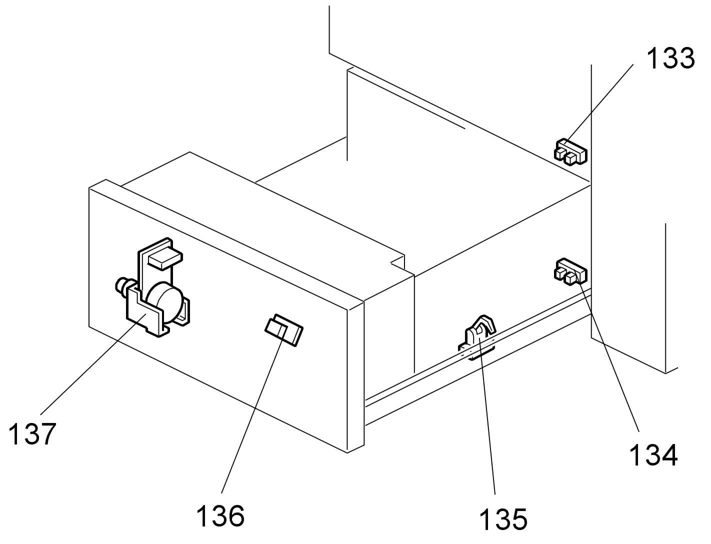
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COPIER (A229) ELECTRICAL COMPONENT LAYOUT (2/2)

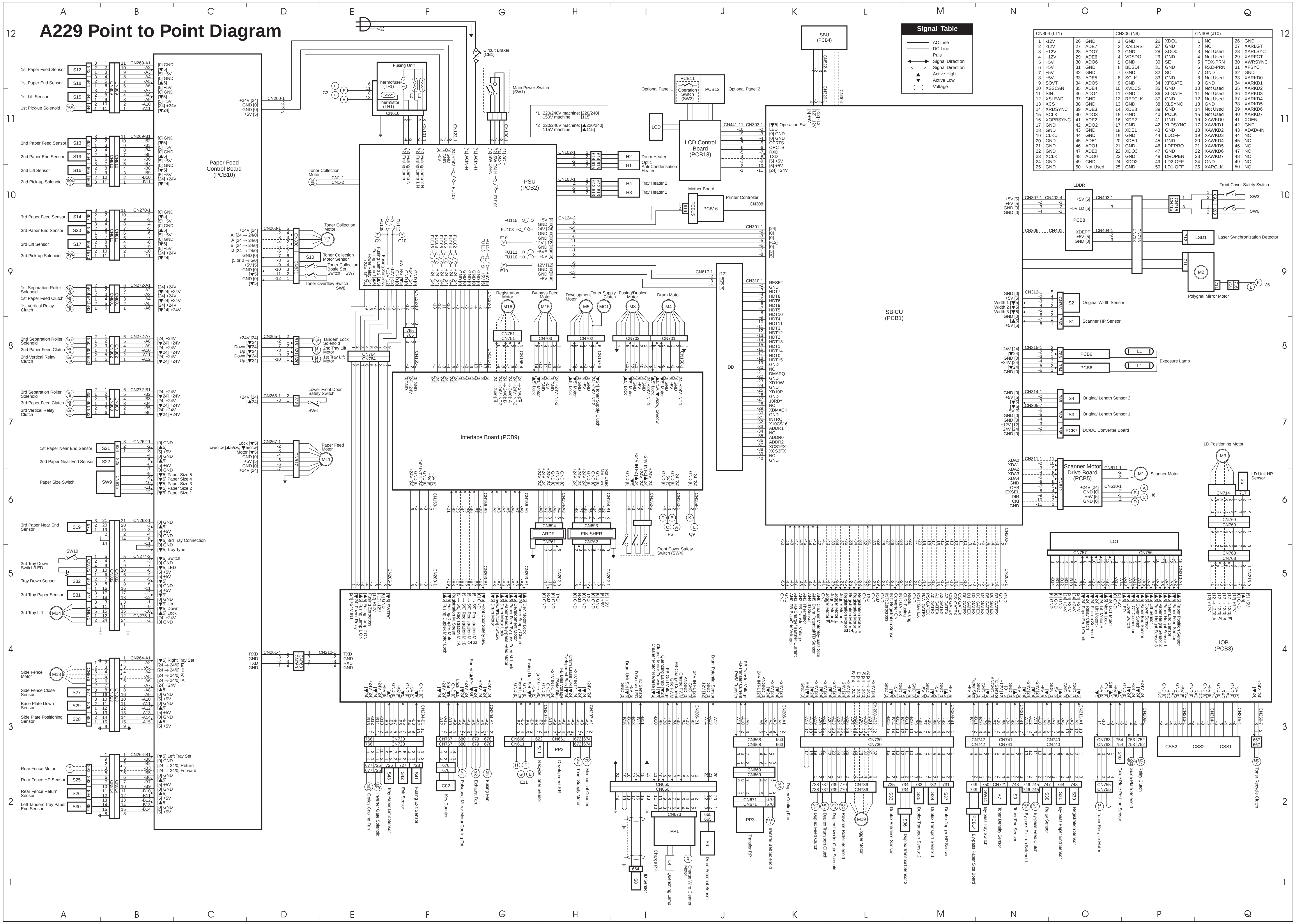
Symbol	Index No.	Description	P to P
Printed Circuit Board			
PCB 1	23	SBICU	L9
PCB 2	57	PSU	G10
PCB 3	52	IOB	Q4
PCB 4	21	SBU (Sensor Board Unit)	K1
PCB 5	51	Scanner Motor Drive	O7
PCB 6	22	Lamp Regulator	O8
PCB 7	19	DC/DC Converter	O7
PCB 8	27	LDDR	O10
PCB 9	64	Interface	G7
PCB10	58	Paper Feed Control	C11
PCB11	31	Operation Panel 1	I12
PCB12	34	Operation Panel 2	J12
PCB13	33	LCD Control	J11
PCB14	101	By-pass Paper Size	M2
PCB15	54	Mother (Option)	J10
PCB16	55	Printer Controller(Option)	J10
Motors			
M 1	17	Scanner	P6
M 2	25	Polygonal Mirror	Q9
M 3	29	LD Positioning	Q7
M 4	39	Drum	I9
M 5	40	Development	H9
M 6	48	Toner Supply	H3
M 7	90	Charge Wire Cleaner	J1
M 8	37	Fusing/Duplex	I9
M 9	5	Toner Collection	E10
M10	8	Toner Recycle	O2
M11	46	Paper Feed	E7
M12	44	1st Tray Lift	D8
M13	45	2nd Tray Lift	D8
M14	135	3rd Tray Lift	A5
M15	43	By-pass Feed	H9
M16	42	Registration	G9
M17	72	Rear Fence	A3
M18	77	Side Fence	A4
M19	80	Jogger	L2
M20	24	Optics Cooling Fan	E2
M21	49	Polygonal Mirror Motor Cooling Fan	F2
M22	38	Exhaust Fan	G2
M23	50	Fusing Fan	G2
M24	47	Duplex Cooling Fan	K2
M25	59	PSU Cooling Fan	D10

Symbol	Index No.	Description	P to P
Sensors			
S 1	35	Scanner HP	O8
S 2	36	Original Width	O9
S 3	18	Original Length 1	O7
S 4	20	Original Length 2	O7
S 5	28	LD Unit Home Position	Q6
S 6	88	Drum Potential	J1
S 7	95	TD	N2
S 8	91	ID	I1
S 9	94	Toner End	N2
S10	9	Toner Collection Motor	E9
S11	1	Recycle Toner	H3
S12	129	1st Paper Feed	A12
S13	126	2nd Paper Feed	A11
S14	125	3rd Paper Feed	A10
S15	132	1st Lift	A11
S16	128	2nd Lift	A10
S17	123	3rd Lift	A9
S18	130	1st Paper End	A12
S19	127	2nd Paper End	A11
S20	124	3rd Paper End	A10
S21	99	By-pass Paper End	O2
S22	110	1st Paper Near End	A7
S23	131	2nd Paper Near End	A7
S24	133	3rd Paper Near End	A6
S25	79	Rear Fence HP	A2
S26	78	Rear Fence Return	A2
S27	75	Side Fence Close	A4
S28	74	Side Fence Positioning	A3
S29	76	Base Plate Down	A3
S30	73	Left Tandem Paper End	A2
S31	135	3rd Tray Paper	A5
S32	134	Tray Down	A5
S33	65	Duplex Entrance	L2
S34	66	Duplex Transport 1	M2
S35	68	Duplex Transport 2	M2
S36	71	Duplex Transport 3	M2
S37	69	Duplex Jogger HP	M2
S38	104	Relay	N2
S39	106	Registration	O2
S40	105	Guide Plate Position	O3
S41	107	Fusing Exit	F2
S42	108	Exit	F2
S43	109	Tray Paper Limit	E2

Symbol	Index No.	Description	P to P
Magnetic Clutches			
MC 1	41	Toner Supply	H9
MC 2	2	Toner Recycle	Q3
MC 3	112	1st Paper Feed	A9
MC 4	115	2nd Paper Feed	A8
MC 5	120	3rd Paper Feed	A7
MC 6	100	By-pass Feed	N2
MC 7	67	Duplex Transport	K2
MC 8	70	Duplex Feed	K2
MC 9	113	1st Vertical Relay	A9
MC10	116	2nd Vertical Relay	A8
MC11	119	3rd Vertical Relay	A7
MC12	103	Relay	P3
Solenoids			
SOL 1	92	Transfer Belt	K2
SOL 2	111	1st Pick-up	A11
SOL 3	117	2nd Pick-up	A10
SOL 4	121	3rd Pick-up	A9
SOL 5	98	By-pass Pick-up	N2
SOL 6	114	1st Separation Roller	A9
SOL 7	118	2nd Separation Roller	A8
SOL 8	122	3rd Separation Roller	A7
SOL 9	4	Tandem Lock	A8
SOL10	82	Duplex Inverter Gate	L2
SOL11	81	Reverse Roller	L2
SOL12	102	Guide Plate	P3
SOL13	96	Inverter Gate	E2
Switches			
SW 1	11	Main Power	G12
SW 2	30	Operation	J11
SW 3	12	Front Door Safety 1	Q10
SW 4	13	Front Door Safety 2	I5
SW 5	14	Front Door Safety 3	Q10
SW 6	10	Lower Front Door Safety	D7
SW 7	7	Toner Collection Bottle Set	E9
SW 8	6	Toner Overflow	E9
SW 9	3	Paper Size	B6
SW10	136	3rd Tray Down	A5
SW11	97	By-pass Tray	N2

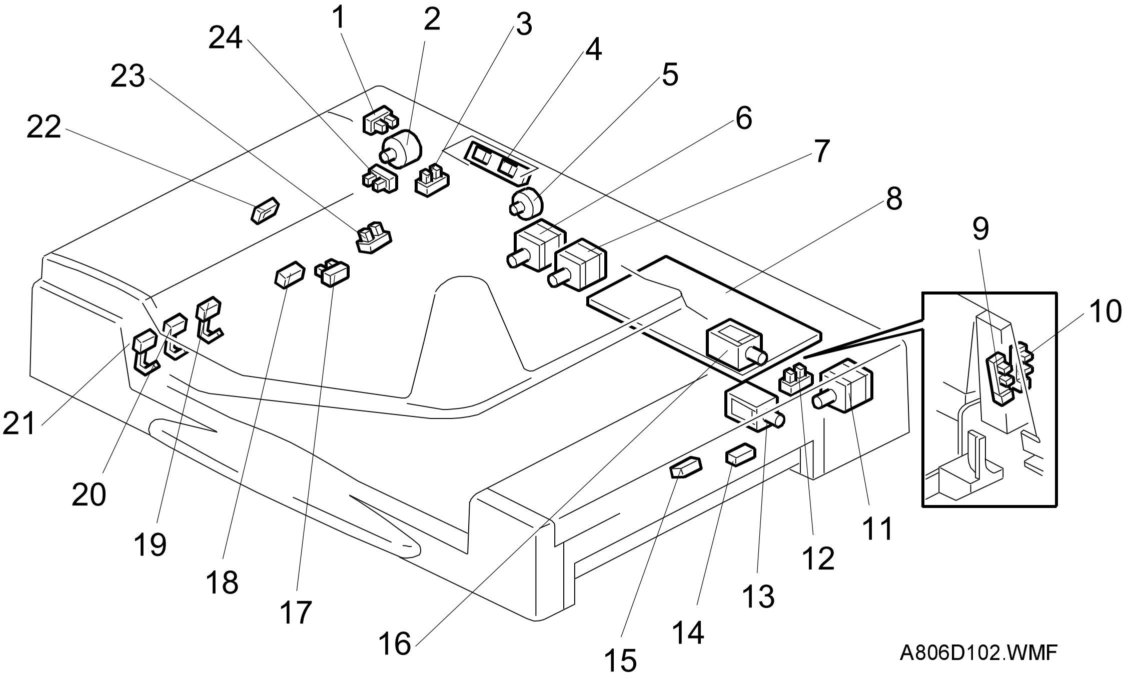
Symbol	Index No.	Description	P to P
Lamps			
L 1	15	Exposure	P8
L 2	86	Fusing 1	F12
L 3	85	Fusing 2	F12
L 4	89	Quenching	I1
Heaters			
H 1	16	Optics Anti-condensation	I11
H 2	63	Drum	I11
H 3	62	Tray 1	I10
H 4	60	Tray 2	I10
Power Packs			
PP 1	87	Charge	I2
PP 2	56	Development	H3
PP 3	93	Transfer	J2
Others			
CB 1	61	Circuit Braker	G12
HDD 1	53	HDD	J8
LCD 1	32	LCD	I11
LSD 1	26	Laser Synchronization Detector	Q10
TF 1	84	Fusing Thermofuse	F12
TH 1	83	Fusing Thermistor	E11
TP 1	(32)	Touch Panel	-

A229 Point to Point Diagram


Signal Table
AC Line
DC Line
Puls
Signal Direction
Signal Direction
Active High
Active Low
Voltage
Paper Feed Control Board (PCB10)
PSU (PCB2)
Interface Board (PCB9)
SBICU (PCB1)
IOB (PCB3)
LCD Control Board (PCB13)
SBU (PCB4)
LDDR
PCB8
HDD
Fusing Unit
Thermofuse (TF1)
Thermistor (TH1)
Circuit Braker (CB1)
Main Power Switch (SW1)
*1 220/240V machine: [220/240] 150V machine: [115]
*2 220/240V machine: [▲220/240] 115V machine: [▲115]
Optional Panel 1
Optional Panel 2
Operation Switch (SW2)
Mother Board
Printer Controller
PCB16
Front Cover Safety Switch
SW3
SW6
Laser Synchronization Detector
Polygonal Mirror Motor
Original Width Sensor
Scanner HP Sensor
Exposure Lamp
Original Length Sensor 2
Original Length Sensor 1
DC/DC Converter Board
Scanner Motor Drive Board (PCB5)
Scanner Motor
LD Positioning Motor
LD Unit HP Sensor
LCT
1st Paper Feed Sensor
1st Paper End Sensor
1st Lift Sensor
1st Pick-up Solenoid
2nd Paper Feed Sensor
2nd Paper End Sensor
2nd Lift Sensor
2nd Pick-up Solenoid
3rd Paper Feed Sensor
3rd Paper End Sensor
3rd Lift Sensor
3rd Pick-up Solenoid
1st Separation Roller Solenoid
1st Paper Feed Clutch
1st Vertical Relay Clutch
2nd Separation Roller Solenoid
2nd Paper Feed Clutch
2nd Vertical Relay Clutch
3rd Separation Roller Solenoid
3rd Paper Feed Clutch
3rd Vertical Relay Clutch
1st Paper Near End Sensor
2nd Paper Near End Sensor
Paper Size Switch
3rd Paper Near End Sensor
3rd Tray Down Switch/LED
Tray Down Sensor
3rd Tray Paper Sensor
3rd Tray Lift
Side Fence Motor
Side Fence Close Sensor
Base Plate Down Sensor
Side Plate Positioning Sensor
Rear Fence Motor
Rear Fence HP Sensor
Rear Fence Return Sensor
Left Tandem Tray Paper End Sensor
Toner Collection Motor
Toner Collection Motor Sensor
Toner Collection Bottle Set Switch
Toner Overflow Switch
Tandem Lock Solenoid
2nd Tray Lift Motor
1st Tray Lift Motor
Lower Front Door Safety Switch
Paper Feed Motor
Drum Heater
Optic Anti-Condensation Heater
Tray Heater 2
Tray Heater 1
Registration Motor
By-pass Feed Motor
Development Motor
Toner Supply Clutch
Fusing/Duplex Motor
Drum Motor
ARDF
FINISHER
Front Cover Safety Switch (SW4)
Optics Cooling Fan
Inverter Gate Solenoid
Tray Paper Limit Sensor
Exit Sensor
Fusing Exit Sensor
Key Counter
Polygonal Mirror Motor Cooling Fan
Exhaust Fan
Fusing Fan
Recycle Toner Sensor
Development PP
Toner Supply Motor
Mechanical Counter
ID Sensor
Charge PP
Quenching Lamp
Charge Wire Cleaner Motor
Drum Potential Sensor
Transfer PP
Transfer Belt Solenoid
Duplex Cooling Fan
Duplex Feed Clutch
Duplex Transport Clutch
Duplex Inverter Gate Solenoid
Reverse Roller Solenoid
Jogger Motor
Duplex Entrance Sensor
Duplex Transport Sensor 3
Duplex Transport Sensor 2
Duplex Transport Sensor 1
Duplex Jogger HP Sensor
By-pass Paper Size Board
By-pass Tray Switch
Toner Density Sensor
Toner End Sensor
By-pass Pick-up Solenoid
By-pass Feed Clutch
Relay Sensor
By-pass Paper End Sensor
Registration Sensor
Toner Recycle Motor
Guide Plate Position Sensor
Guide Plate Solenoid
Relay Clutch
Toner Recycle Clutch
CSS2
CSS2
CSS1
PP1
PP2
PP3

CN304 (L11)				CN306 (N9)				CN308 (J10)			
1	-12V	26	GND	1	GND	26	XDO1	1	NC	26	GND
2	-12V	27	ADE7	2	XALLRST	27	GND	2	NC	27	XARLGT
3	+12V	28	ADO7	3	GND	28	XDO0	3	Not Used	28	XARLSYC
4	+12V	29	ADE6	4	VDSDO	29	GND	4	Not Used	29	XARFGT
5	+5V	30	ADO6	5	GND	30	SE	5	TDX-PRN	30	XWRSYNC
6	+5V	31	GND	6	BDSDI	31	GND	6	RXD-PRN	31	XFSYC
7	+5V	32	GND	7	GND	32	SO	7	GND	32	GND
8	+5V	33	ADE5	8	SCLK	33	GND	8	Not Used	33	XARKD0
9	SOVT	34	ADO5	9	GND	34	XFGATE	9	GND	34	XARKD1
10	XSSCAN	35	ADE4	10	XVDCS	35	GND	10	Not Used	35	XARKD2
11	SIN	36	ADO4	11	GND	36	XLGATE	11	Not Used	36	XARKD3
12	XSLEAD	37	GND	12	REFCLK	37	GND	12	Not Used	37	XARKD4
13	XCS	38	GND	13	GND	38	XLSYNC	13	GND	38	XARKD5
14	XRDSYNC	39	ADE3	14	XDE3	39	GND	14	Not Used	39	XARKD6
15	SCLK	40	ADO3	15	GND	40	PCLK	15	Not Used	40	XARKD7
16	XOPBSYNC	41	ADE2	16	XDE2	41	GND	16	XAWKD0	41	XOEN
17	GND	42	ADO2	17	GND	42	XLDSYNC	17	XAWKD1	42	GND
18	GND	43	GND	18	XDE1	43	GND	18	XAWKD2	43	XDATA-IN
19	CLKU	44	GND	19	GND	44	LDOFF	19	XAWKD3	44	NC
20	GND	45	ADE1	20	XDE0	45	GND	20	XAWKD4	45	NC
21	GND	46	ADO1	21	GND	46	LDERRO	21	XAWKD5	46	NC
22	GND	47	ADE0	22	XDO3	47	GND	22	XAWKD6	47	NC
23	XCLK	48	ADO0	23	GND	48	DROPEN	23	XAWKD7	48	NC
24	GND	49	GND	24	XDO2	49	LD2-OFF	24	GND	49	NC
25	GND	50	Not Used	25	GND	50	LD1-OFF	25	XARCLK	50	NC

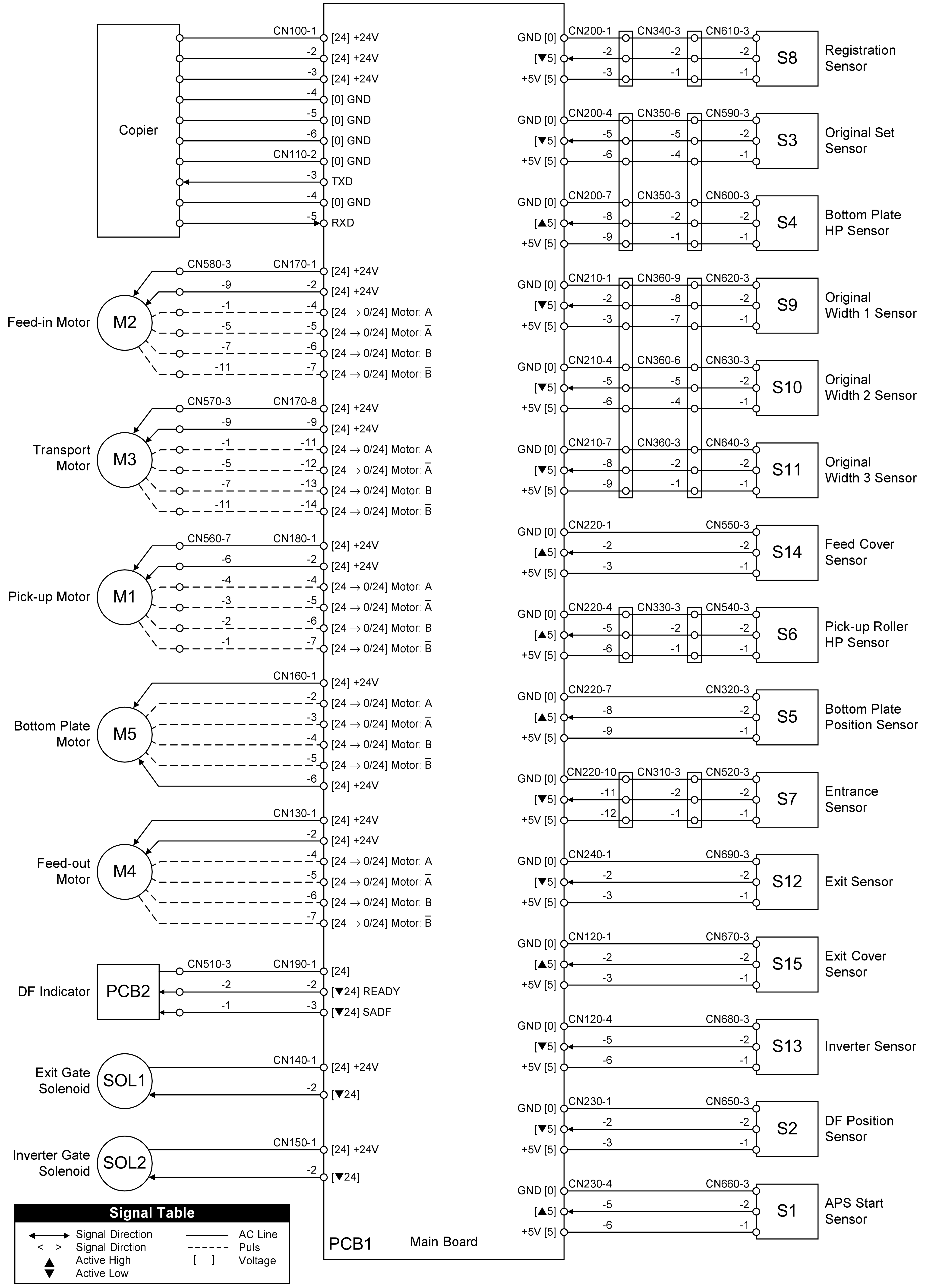
AUTO DOCUMENT FEEDER (A806) ELECTRICAL COMOPONENT LAYOUT



Symbol	Index No.	Description	P to P
Sensors			
S1	9	APS Start	S13
S2	10	DF Position	R13
S3	23	Original Set	D13
S4	17	Bottom Plate HP	E13
S5	24	Bottom Plate Position	L13
S6	1	Pick-up Roller HP	K2
S7	22	Entrance	M13
S8	18	Registration	B13
S9	21	Original Width-1	F13
S10	20	Original Width-2	G13
S11	19	Original Width-3	H13
S12	15	Exit	N13
S13	14	Inverter	Q13
S14	3	Feed Cover	I13
S15	12	Exit Cover	O13

Symbol	Index No.	Description	P to P
Motors			
M1	2	Pick-up	J2
M2	6	Feed-in	F2
M3	7	Transport	H2
M4	11	Feed-out	N2
M5	5	Bottom plate	L2
Solenoids			
SOL1	13	Exit Gate	Q2
SOL2	16	Inverter Gate	R2
PCBs			
PCB1	8	Main	T7
PCB2	4	DF Indicator	P2

POINT TO POINT DIAGRAM (ARDF: A806)


Copier
CN100-1 [24] +24V
-2 [24] +24V
-3 [24] +24V
-4 [0] GND
-5 [0] GND
-6 [0] GND
CN110-2 [0] GND
-3 TXD
-4 [0] GND
-5 RXD
Feed-in Motor M2
CN580-3 CN170-1 [24] +24V
-9 -2 [24] +24V
-1 -4 [24 → 0/24] Motor: A
-5 -5 [24 → 0/24] Motor: Ā
-7 -6 [24 → 0/24] Motor: B
-11 -7 [24 → 0/24] Motor: B̄
Transport Motor M3
CN570-3 CN170-8 [24] +24V
-9 -9 [24] +24V
-1 -11 [24 → 0/24] Motor: A
-5 -12 [24 → 0/24] Motor: Ā
-7 -13 [24 → 0/24] Motor: B
-11 -14 [24 → 0/24] Motor: B̄
Pick-up Motor M1
CN560-7 CN180-1 [24] +24V
-6 -2 [24] +24V
-4 -4 [24 → 0/24] Motor: A
-3 -5 [24 → 0/24] Motor: Ā
-2 -6 [24 → 0/24] Motor: B
-1 -7 [24 → 0/24] Motor: B̄
Bottom Plate Motor M5
CN160-1 [24] +24V
-2 [24 → 0/24] Motor: A
-3 [24 → 0/24] Motor: Ā
-4 [24 → 0/24] Motor: B
-5 [24 → 0/24] Motor: B̄
-6 [24] +24V
Feed-out Motor M4
CN130-1 [24] +24V
-2 [24] +24V
-4 [24 → 0/24] Motor: A
-5 [24 → 0/24] Motor: Ā
-6 [24 → 0/24] Motor: B
-7 [24 → 0/24] Motor: B̄
DF Indicator PCB2
CN510-3 CN190-1 [24]
-2 -2 [▼24] READY
-1 -3 [▼24] SADF
Exit Gate Solenoid SOL1
CN140-1 [24] +24V
-2 [▼24]
Inverter Gate Solenoid SOL2
CN150-1 [24] +24V
-2 [▼24]
PCB1 Main Board
GND [0] CN200-1 CN340-3 CN610-3 S8 Registration Sensor
[▼5] -2 -2 -2
+5V [5] -3 -1 -1
GND [0] CN200-4 CN350-6 CN590-3 S3 Original Set Sensor
[▼5] -5 -5 -2
+5V [5] -6 -4 -1
GND [0] CN200-7 CN350-3 CN600-3 S4 Bottom Plate HP Sensor
[▲5] -8 -2 -2
+5V [5] -9 -1 -1
GND [0] CN210-1 CN360-9 CN620-3 S9 Original Width 1 Sensor
[▼5] -2 -8 -2
+5V [5] -3 -7 -1
GND [0] CN210-4 CN360-6 CN630-3 S10 Original Width 2 Sensor
[▼5] -5 -5 -2
+5V [5] -6 -4 -1
GND [0] CN210-7 CN360-3 CN640-3 S11 Original Width 3 Sensor
[▼5] -8 -2 -2
+5V [5] -9 -1 -1
GND [0] CN220-1 CN550-3 S14 Feed Cover Sensor
[▲5] -2 -2
+5V [5] -3 -1
GND [0] CN220-4 CN330-3 CN540-3 S6 Pick-up Roller HP Sensor
[▲5] -5 -2 -2
+5V [5] -6 -1 -1
GND [0] CN220-7 CN320-3 S5 Bottom Plate Position Sensor
[▲5] -8 -2
+5V [5] -9 -1
GND [0] CN220-10 CN310-3 CN520-3 S7 Entrance Sensor
[▼5] -11 -2 -2
+5V [5] -12 -1 -1
GND [0] CN240-1 CN690-3 S12 Exit Sensor
[▼5] -2 -2
+5V [5] -3 -1
GND [0] CN120-1 CN670-3 S15 Exit Cover Sensor
[▲5] -2 -2
+5V [5] -3 -1
GND [0] CN120-4 CN680-3 S13 Inverter Sensor
[▼5] -5 -2
+5V [5] -6 -1
GND [0] CN230-1 CN650-3 S2 DF Position Sensor
[▼5] -2 -2
+5V [5] -3 -1
GND [0] CN230-4 CN660-3 S1 APS Start Sensor
[▲5] -5 -2
+5V [5] -6 -1
Signal Table
Signal Direction
< > Signal Dirction
▲ Active High
▼ Active Low
AC Line
Puls
[ ] Voltage

RICOH

Technical Bulletin

PAGE: 1/1

Model: SP5	Date: 15-Oct-98	No: 1
Subject: DIP SW of I/O Board	Prepared by: M.Tsuyuki	
From: GTS and S Field Infomation Dept		

Classification:
☐ Troubleshooting ☐ Part information ☐ Action required
☐ Mechanical ☐ Electrical ☒ Service manual revision
☐ Paper path ☐ Transmit/receive ☐ Retrofit information
☐ Other ( )

The DIP switch table for the I/O board is missing from the service manual. Please add the following table to your manual.

DIP SW101

No.	Description	Function
1	Should be off.	-
2	Should be off.	-
3	SC codes display.	On: SC codes are not displayed.
4	Should be off.	-
5	Should be off.	-
6	Version 1	6: Off 7: Off Japanese version 6: On 7: Off 115 V version 6: Off 7: On 220/240 V version
7	Version 2	
8	Should be off.	-

NOTE: **When replacing the I/O board in the field, change the setting of DIP SW6 and 7 to suit the requirements for your area.**

RICOH Technical Bulletin **PAGE: 1/1**

Model: SP5	Date: 15-Oct-98	No: 2
Subject: Point to Point Diagram	Prepared by: M. Tsuyuki	
From: GTS and S Field Infomation Dept		

Classification:

☐ Troubleshooting	☐ Part information	☐ Action required
☐ Mechanical	☐ Electrical	☒ Service manual revision
☐ Paper path	☐ Transmit/receive	☐ Retrofit information
☐ Other ( )		

Please correct your A229 point to point diagram as follows

- **Name of the component (position: E10)**

  Toner Collection Motor → PSU Cooling Fan
- **Symbol of the component (position: E10)**

  Toner Collection Motor (SOL9) → Toner Collection Motor (M9)
- **Signal level (position: O3)**

  CN209-10: +5V[5] → +24V[24]

  CN209-11: [▼5] → [▼24]
- **Connector No. (position: D7 and L3-K3)**

  CN266-1 → CN266-3
  CN266-3 → CN266-1
  CN208-A32 → CN208-A1
  CN208-A31 → CN208-A2
  CN208-A30 → CN208-A3
  CN208-A29 → CN208-A4
  CN208-A28 → CN208-A5
  CN208-A27 → CN208-A6
  CN208-A26 → CN208-A7
  CN208-A25 → CN208-A8
  CN208-A24 → CN208-A9
  CN208-A23 → CN208-A10
  CN208-A22 → CN208-A11
  CN208-A21 → CN208-A12
  CN208-A20 → CN208-A13
  CN208-A19 → CN208-A14
  CN208-A18 → CN208-A15
  CN208-A17 → CN208-A16

RICOH **T**echnical **B**ulletin **PAGE: 1/1**

Model: SP5	Date: 15-Oct-98	No: 3
Subject: SP mode	Prepared by: M. Tsuyuki	
From: GTS and S Field Information Dept		

Classification:	☐ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☒ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

Please correct and add the following SP mode to your manual.

- **Correction**

  SP4-008

  Scanner **Main** Scan Magnification → Scanner **Sub** Scan Magnification

- **Deletion**

  SP7-823

  Because there is no SP7-303.

- **Addition**

  SP2-966 *(Periodic Auto Process Control)*

  Function: Selects whether process control initial setting is started at periodic intervals if the following conditions exist.

  1. 24 hours or more have been passed since the last Process Control Initial Setting.
  2. The copy job is finished.

  Settings: OFF(default)/ON

  SP6-901 *(Original No Wait Time)*

  SP6-901-1 *(Normal Originals)*

  Function: Adjusts the interval between originals in normal original mode.

  Settings: 500ms ~ 700ms / 10mm/step / 620ms (default)

  SP6-901-2 *(Thin Originals)*

  Function: Adjust the intervals between originals in thin original mode.

  Settings: 500ms ~ 700ms / 10mm/step / 520ms (default)

Model: SP5	Date: 31-Oct-98	No.: 4

Subject: Development Entrance Seal Replacement	Prepared by: A. Sasaki
From: GTS and S Field Information Dept.	

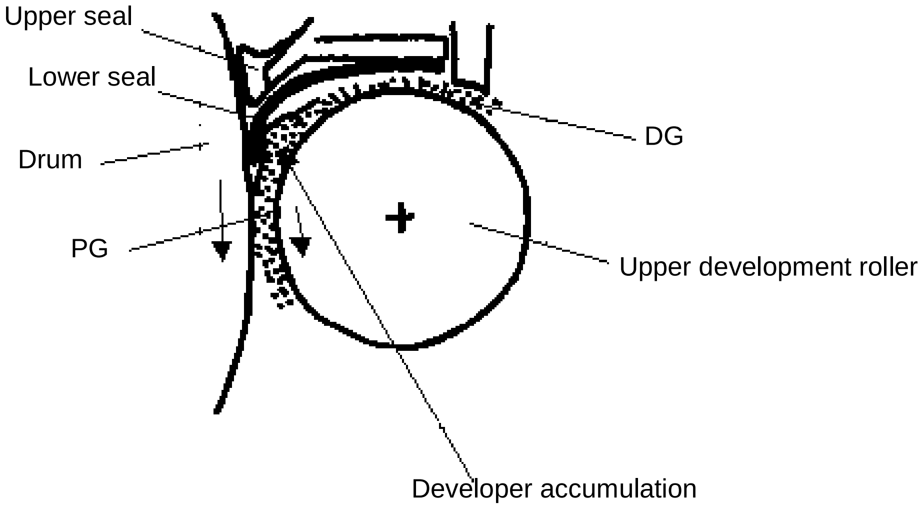
Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

This is to inform about a problem that could occur in theory.

This problem, however, will not occur at an early stage but may develop as the machine is used over a long period of time. This problem may only occur when the photoconductor gap (PG) is at the narrowest setting (0.65 mm) and the doctor gap is at the widest setting (0.70 mm). This PG/DG setting does not exist in production machines as far as checked in the factory but is still within the adjusting range.

- Problem -

The lower seal (straight; the upper seal is a loop) of the development unit entrance seal ass'y (P/N A2293092) may get pinched between the developer and the drum if a large amount of developer accumulates near the photoconductor gap (PG). The seal may be pulled out of position by the friction caused by the rotation of the drum. In the worst case, the seal would peel off.



- Cause -

The width of the lower seal is 18 mm, which may be too much. This problem does not occur with the previous entrance seal ass'y (P/N A0963103) that has a width of 17mm.

- Countermeasure -

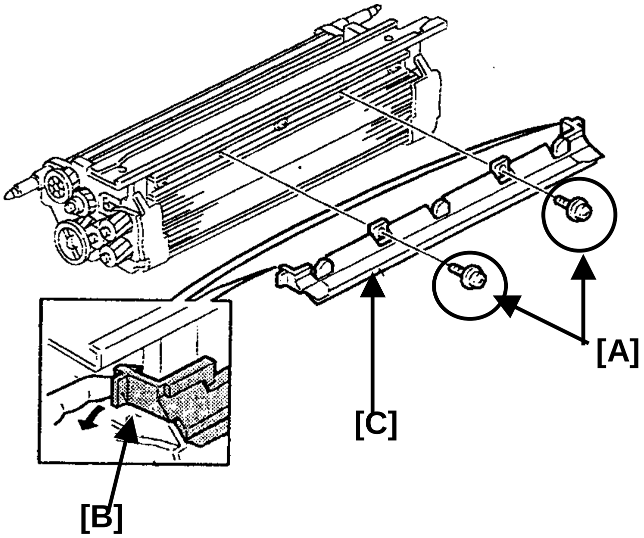
The width of the lower seal will be returned to the original 17 mm from 18 mm. Though the 17 mm lower seal may wrap up, the function of this part is not adversely affected. The part number of the new development unit entrance seal ass'y will be A2293091.

- Targeted Machines -

Model	Code	Brand	Destination	Total	Sub-Total	Serial Numbers
SP5	A229-10	Savin/ Gestetner	USA, Canada	250	100 150	2B48060001 thru 2B48060100 2B48070001 thru 2B48070150
	A229-17	Ricoh	USA, Canada	500	169 331	A7908060194 thru A7908060362 A7908070001 thru A7908070331
	A229-22	NRG	Europe, etc.	254	70 130 52 2	AS78060001 thru AS78060070 AS78070001 thru AS78070130 AS7808-0001, -0002, -0004, -0006 thru -0008, -0012 thru -0014, -0017, -0021 thru -0025, -0027, -0029 thru -0031, -0034 thru -0042, -0044, -0046 thru -0051, -0054 thru -0059, -0061, -0064 thru -0072, -0074 AS7809-0015, -0016
	A229-26	Infotec	Europe, etc.	120	60 60	3R30780001 thru 3R30780060 3R30880001 thru 3R30880060
	A229-27	Ricoh	Europe, etc.	486	173 67 120 126	A7908060001 thru A7908060173 A7908070332 thru A7908070398 A7908080001 thru A7908080120 A790809-0002, -0005 thru -0010, -0012 thru -0015, -0017 thru -0020, -0022, -0024 thru -0027, -0029 thru -0032, -0034 thru -0036, -0038 thru -0041, -0044 thru -0049, -0051 thru -0053, -0055, -0056, -0060, -0062, -0064, -0068 thru -0070, -0073 thru -0076, -0078, -0080, -0083 thru -0086, -0089, -0090, -0093, -0096, -0097, -0099 thru -0101, -0103 thru -0107, -0109, -0111, -0112, -0114 thru -0116, -0118 thru -0166
	A229-29	Ricoh	Asia, Oceania	25	20 5	A7908060174 thru A7908060193 A790808-0121, -0123 thru -0126

- Replacement Procedure -

1. Remove the 2 screws **[A]** that secure the entrance seal.
2. While pulling on the lock clip **[B]**, slip off the entrance seal ass’y **[C]**.
3. Install a new entrance seal ass’y.



RICOH

Technical Bulletin

Model: SP5
Date: 30-Nov-98
No.: 5

Subject: Black Spots on First Copy after Warming up
Prepared by: A. Sasaki
From: GTS and S Field Information Dept.

Classification:
☒ Troubleshooting
☐ Mechanical
☐ Paper path
☐ Other (   )
☐ Part information
☐ Electrical
☐ Transmit/receive
☐ Action required
☐ Service manual revision
☐ Retrofit information

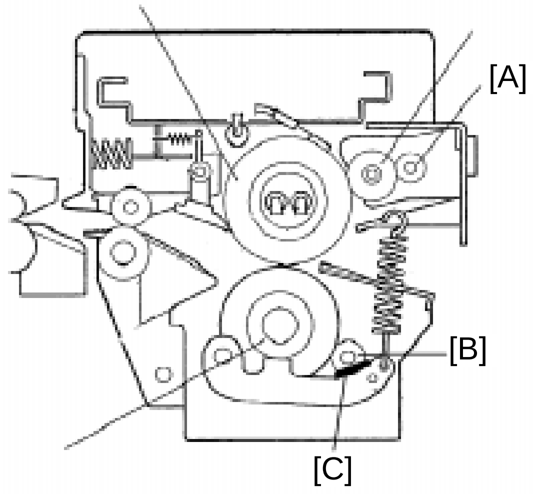
This is to inform you about troubleshooting when black spots appear on the first copy after warming up.

Problem

Black spots may appear on the front or rear side of the first copy after warming up. The diameter of the spots is 3 mm at most. The number of spots may be around 20 in the worst case.

Cause

When the machine turns off and the temperature of the fusing unit becomes low, toner adheres less strongly to the hot roller cleaning roller [A] and pressure roller cleaning roller [B]. In this condition, the toner on the hot roller cleaning roller [A], pressure roller cleaning roller [B] or pressure roller cleaning brush [C] may be transferred back to the hot roller or pressure roller and may finally adhere to the first copy after warming up.



This problem depends on how much calcium carbonate comes out from the copy paper and mixes with toner. When more calcium carbonate is mixed with toner, the problem becomes worse if the brush [C] is not installed.

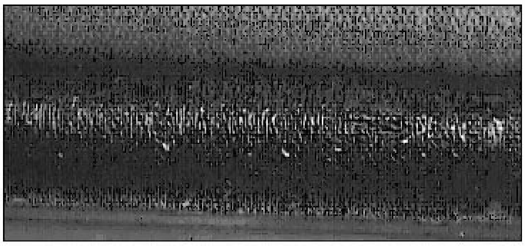
According to tests, many brands of paper in Europe and Asia include a lot of calcium carbonate and many of the American ones do not.
That is why the pressure roller cleaning brush [C] is installed only in the European and Asian/Oceanian models to remove toner from the pressure roller cleaning roller [B]. (The brush is not installed in the American model.)

Action

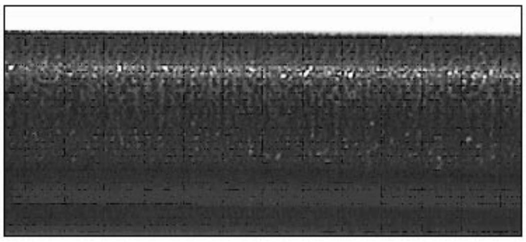
1. Please change the setting of SP1-103 from 0 (5.5 min) to 2 (15 min).
   A longer fusing idling time can help to make the temperature of the pressure roller just after warming up higher.
2. Please judge the necessity of the pressure roller cleaning brush by looking how the mixture of toner and calcium carbonate adheres to the cleaning roller surface.

   - Not necessary -

   The brush is not necessary when the surface of the hot roller cleaning roller and pressure roller cleaning roller looks shiny like the pictures below.



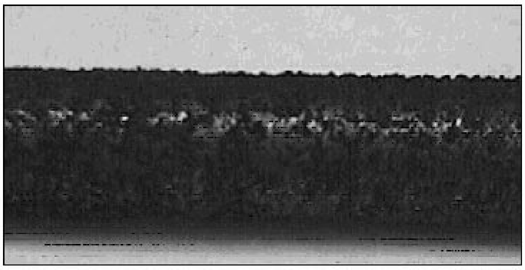
Hot roller cleaning roller



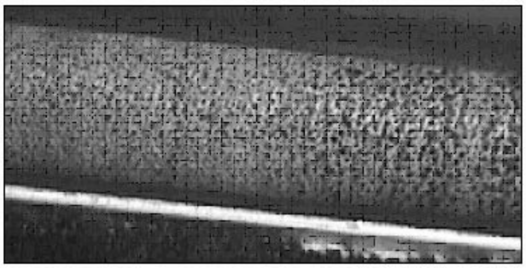
Pressure roller cleaning roller

   - Necessary -

   The brush (A229 4153) is necessary when the surface of the hot roller cleaning roller and pressure roller cleaning roller does not look smooth, with many small balls with the mixture of toner and calcium carbonate like in the pictures below.



Hot roller cleaning roller



Pressure roller cleaning roller

This is, however, just a recommended guideline and does not match all cases in the field. Even in one machine, the condition of the cleaning roller surface may change in any of the following operations.

- When two or more different kinds of copy paper are used.
- When most copies for one day are single-sided and the number of single-sided copies is large, such as 4,000 copies or more.
- When most copies for one day are single-sided and the image (black) area is low, such as 6% or less.

RICOH **Technical Bulletin** **PAGE: 1/1**

Model: SP5L	Date: 31-Dec-98	No.: 6

Subject: Different Points from SP5	Prepared by: M.Tsuyuki
From: GTSS Field Information Dept.	

Classification:
☐ Troubleshooting
☐ Mechanical
☐ Paper path
☒ Other (Series Model Information)
☐ Part information
☐ Electrical
☐ Transmit/receive
☐ Action required
☐ Service manual revision
☐ Retrofit information

The following table shows the differences between the SP5 and SP5L.

No.	Item	SP5	SP5L
1	Copy Speed	Max. 65 cpm (A4/8½” x 11” sideways)	Max. 55 cpm (A4/8½” x 11” sideways)
2	Duplex copy on A5/5½” x 8½”	Modify the 2nd tray (by field engineer). (The 2nd tray will be modified to be the same as the SP5L tray.)	Change the fence position of the 2nd tray (by customer).

Technical Bulletin

Model: SP5/SP5L	Date: 31-Jan-99	No.: 7

Subject: Scanned Image on the Hard Disk	Prepared by: A. Sasaki
From: GTSS Field Information Dept.	

Classification:	☐ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☒ Other (Software explanation)		

With analog copiers, it has not been necessary to think about confidentiality of originals used for copying. Our copiers have recently been shifting from analog to digital in many segments. Since most digital copiers have a hard disk that can store scanned originals for job completion (such as collating), we must prevent the scanned originals from being recalled from the hard disk by someone else.

The following explains how the software handles the scanned images on the hard disk. Please explain to the customers when required.

In the copy mode, when an original is scanned, the scanned original is stored as image on the hard disk.
The stored image on the hard disk is deleted when the job is completed (when the Start key turns green for the next job).

RICOH

Technical Bulletin

Model: SP5 (3000 Finisher)	Date: 31-Mar-99	No.: 8

Subject: Software Replacement Information

Prepared by: E. Fukuyama

From: GTSS Field Information Dept.

Classification:
☐ Troubleshooting ☐ Part information ☐ Action required
☐ Mechanical ☐ Electrical ☐ Service manual revision
☐ Paper path ☐ Transmit/receive ☐ Retrofit information
☒ Other ( )

Below please find the modification history from the first production run for the Main Board up to Suffix D for the 3000-sheet Finisher (SR730).

A6975656D

1. Occurrences of SC990
2. Defective paper exit for LG, DLT, A3 and B4 paper sizes.
3. Two staples missing when B5 size paper is stapled.
4. Stacking problems occur when paper curls during manual staple mode. (Modification of shift tray height during manual staple mode, exit roller rotation, speed and shift tray lowering timing)
5. When the paper curl is large during shift mode, the exit roller rolls up the paper. (Modification of the shift tray height in the shift mode, exit roller rotation speed, and shift tray lowering timing)

Model Code	Cut-in Serial #s
A697-15	1B58120001
A697-17	A7778110001
A697-22	AR38110281
A697-26	3R1128001
A697-55	L0328110267

A6975656C

1. When a jam occurs in the finisher, if the jam is not removed, the stapler motor will not shut off.
2. When the power save mode command from the main frame is received, the machine initializes.

Model Code	Cut-in Serial #s
A697-15	1B58090001
A697-17	A7778090001
A697-22	AR38090001
A697-26	3R10980001
A697-55	L0328100052

Model: SP5 (3000 Finisher)	Date: 31-Mar-99	No.: 8

A6975656B

1. To improve the stacking in the shift tray during stapling, the following modifications have been implemented.

a. The initial lowering timing of the shift tray is now faster and the stack start time has been modified to allow the shift tray to return to the top position first.

b. The line velocity for the exit roller has been changed from 600 mm/s to 700 mm/s. The paper exit pawl speed has also been changed to match this.

c. The timing for the lowering of the shift tray has been changed to 50 mm/s after the exit sensor has detected the leading edge of the paper.

Model Code	Cut-in Serial #s
A697-15	1B58070001
A697-17	A7778070001
A697-22	AR38070001
A697-26	3R10780001
A697-55	L0328100052

A6975656A

1. Modification to allow use of Chinese paper sizes.
2. Modification of the start of the shift tray in staple mode.
3. When an exit jam occurs in staple mode, if the door is shut before the paper is removed,
4. Corrected the problem of an SC not being displayed even though there was a problem with the paper exit pawl home position sensor during initialization.
5. If the diagonal staple mode was selected when there was a problem with the stapler rotation home position sensor, an SC occurred.

Model Code	Cut-in Serial #s
A697-15	1B58070001
A697-17	A7778070001
A697-22	AR38070001
A697-26	3R10780001
A697-55	L0328100052

Model: SP5/SP5L	Date: 31-Mar-99	No.: 9

Subject: Dirty Background at Leading Edge			Prepared by: A. Sasaki
From: GTSS Field Information Dept.			
Classification:	☒ Troubleshooting ☐ Mechanical ☐ Paper path ☐ Other ( )	☐ Part information ☐ Electrical ☐ Transmit/receive	☐ Action required ☐ Service manual revision ☐ Retrofit information

This is to explain an adjustment to minimize dirty background at the leading edge of the copy due to overtoning in the development unit.

Symptom

Some toner is slightly visible at the leading edge of the copy.

Solution

Please follow the flow chart of the adjustment procedure on the following pages to minimize the symptom.

Please note that since this adjustment is to stabilize the toner amount in the development unit at a lower level to prevent overtoning, some customers may complain about a lighter image in black solid areas, especially at an early stage from installation and for the first several copies every morning.
Please adjust the SP modes for the development bias to meet the required level for each customer.

However, there is no problem with text area.

New Factory Settings

To minimize the dirty background, the factory settings of some SP modes have been changed to stabilize the toner amount in the development unit at a lower level which prevents overtoning.

Please refer to the explanation on the following page for the details.

Because of the change of the factory settings of some SP modes, black solid areas may be lighter at installation.

This model has a toner recycling system. The toner amount in the development unit is determined with a calculation including not only new toner but also recycled toner. At installation, the pipe for the recycled toner is empty and it takes 1,000 to 2,000 copies for the first recycled toner to come into the development unit.
This means that the toner amount in the development unit is less during the first 1,000 to 2,000 copies after installation and becomes higher after that.

Please adjust the SP modes for the development bias to meet the required level for each customer.

Details of the New Factory Settings

The following settings have been changed.

1. SP2967 (Auto Image Density Adjustment)
   Please note that this SP is available in the main software version 7.42.1 onward.

Old Setting	New Setting
OFF	ON

Function: During the period of process control after the main switch is turned on (if the fusing unit temperature is under 100°C), the toner amount in the development unit is checked and a small amount of toner is used if it is too much. Then, new values of Vref and Vt are determined.

2. SP2201-2 and SP2201-4 (Development Bias Adjustment)

	Old Setting	New Setting
SP2201-2	390	440
SP2201-4	270	320

Function: To make the toner amount in the development unit lower and to make the chargeability of toner higher.

3. SP2209 (Toner Supply Rate)

Old Setting	New Setting
650	850

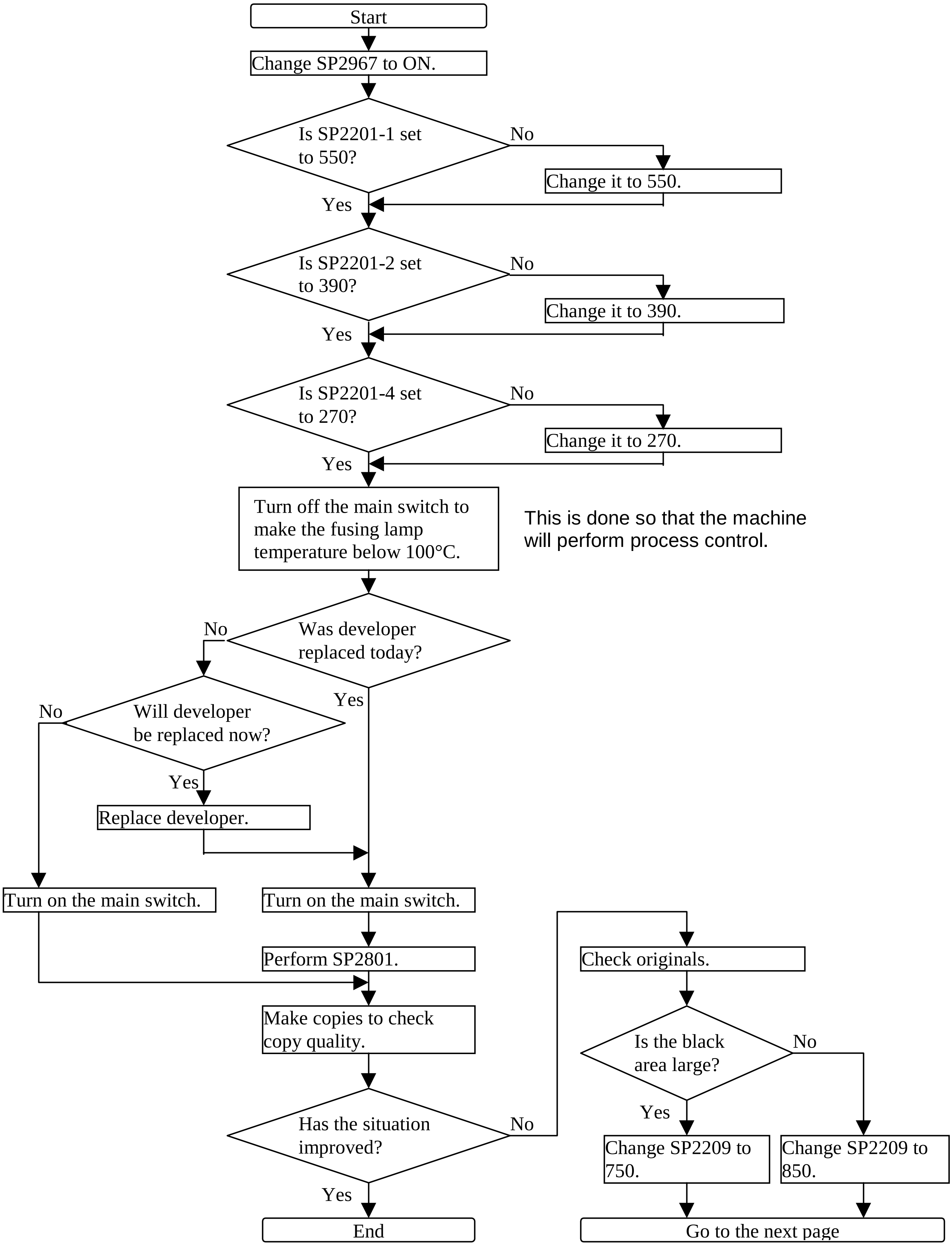
Function: To make the amount of toner supplied for one time smaller and to make the chargeability of toner higher.

The cut-in serial numbers are as follows:

Model Code	Serial Number	Brand
A229-10	2B49410001	Savin/Gestetner
A229-17	A7909410036	Ricoh
A229-22	AS78120001	Gestetner/Nashuatec/Rex Rotary
A229-26	3R31280001	infotec
A229-27	A7908120001	Ricoh
A229-29	A7908120110	Ricoh
A229-50	From first production	Savin/Gestetner
A229-54	From first production	Lanier
A229-55	From first production	Lanier
A229-57	From first production	Ricoh
A229-59	From first production	Ricoh
A229-62	From first production	Gestetner/Nashuatec/Rex Rotary
A229-64	From first production	Lanier
A229-65	From first production	Lanier
A229-66	From first production	infotec
A229-67	From first production	Ricoh

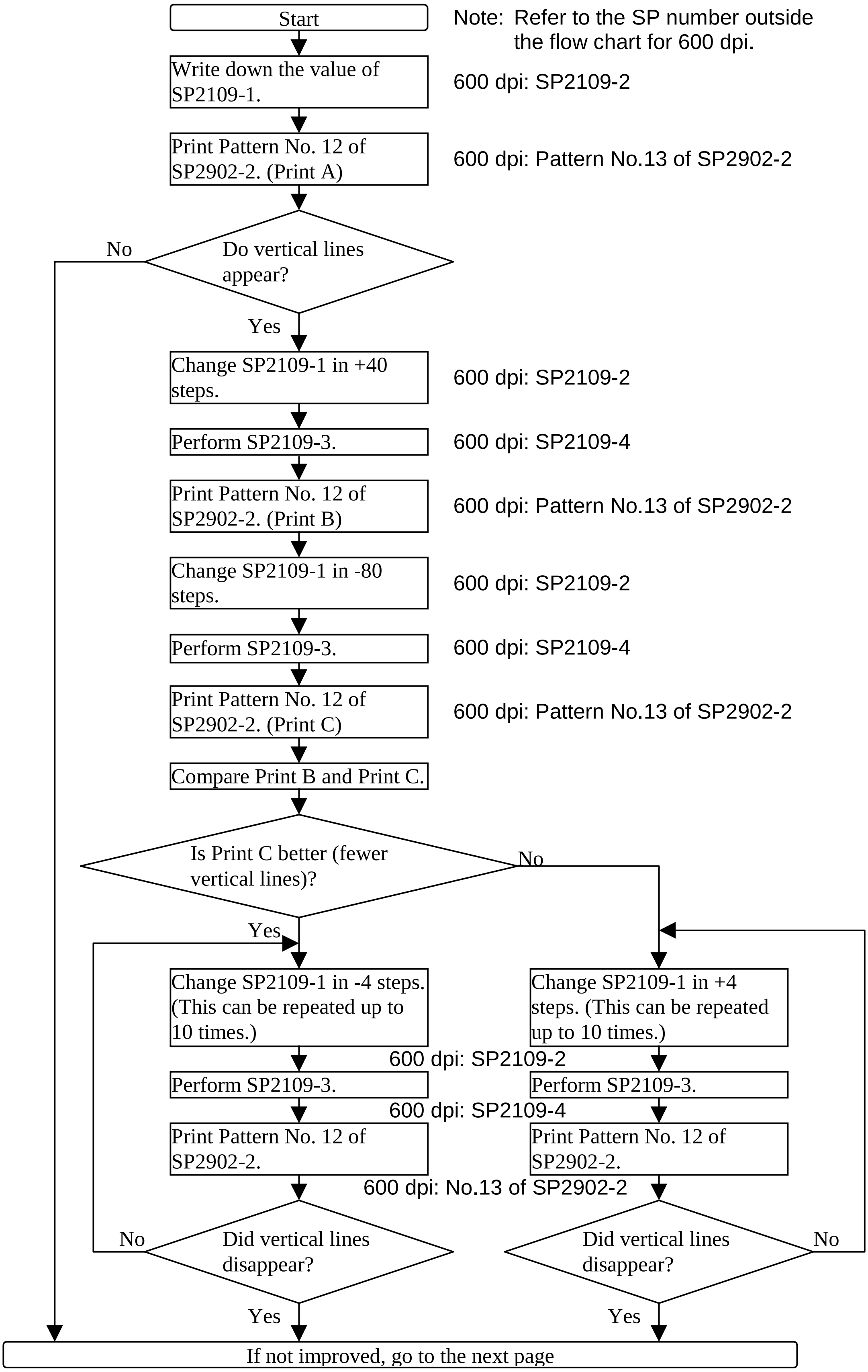
Adjustment Procedure

1. Auto Image Density Adjustment Mode


Start
Change SP2967 to ON.
Is SP2201-1 set to 550?
No
Change it to 550.
Yes
Is SP2201-2 set to 390?
No
Change it to 390.
Yes
Is SP2201-4 set to 270?
No
Change it to 270.
Yes
Turn off the main switch to make the fusing lamp temperature below 100°C.
Was developer replaced today?
No
Yes
Will developer be replaced now?
No
Yes
Replace developer.
Turn on the main switch.
Turn on the main switch.
Perform SP2801.
Make copies to check copy quality.
Has the situation improved?
No
Yes
End
Check originals.
Is the black area large?
No
Yes
Change SP2209 to 750.
Change SP2209 to 850.
Go to the next page

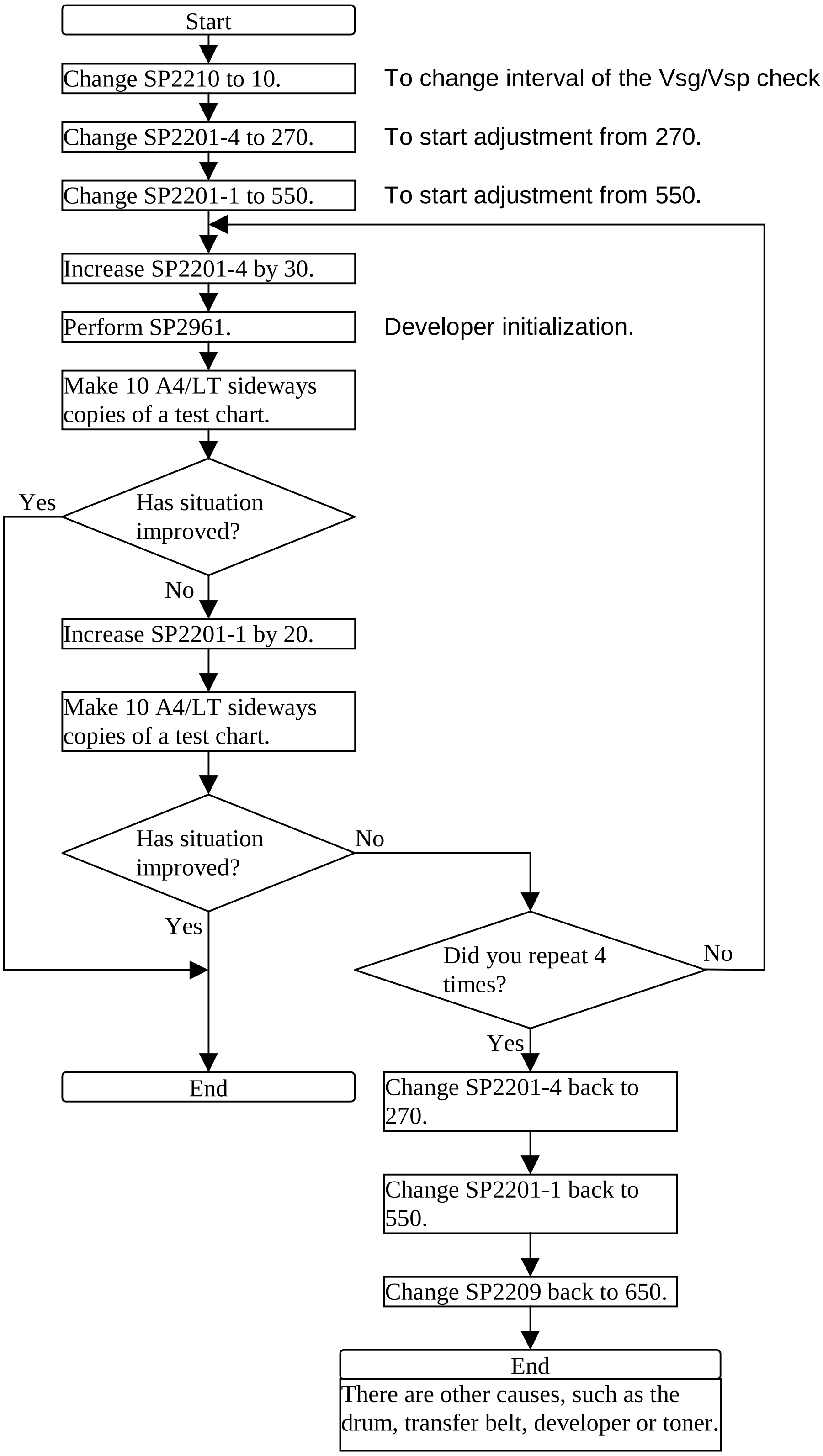
This is done so that the machine will perform process control.

2. Laser Beam Pitch Adjustment
(This is to verify that the laser beam pitch is correctly adjusted.)


Start
Note: Refer to the SP number outside the flow chart for 600 dpi.
Write down the value of SP2109-1.
600 dpi: SP2109-2
Print Pattern No. 12 of SP2902-2. (Print A)
600 dpi: Pattern No.13 of SP2902-2
Do vertical lines appear?
No
Yes
Change SP2109-1 in +40 steps.
600 dpi: SP2109-2
Perform SP2109-3.
600 dpi: SP2109-4
Print Pattern No. 12 of SP2902-2. (Print B)
600 dpi: Pattern No.13 of SP2902-2
Change SP2109-1 in -80 steps.
600 dpi: SP2109-2
Perform SP2109-3.
600 dpi: SP2109-4
Print Pattern No. 12 of SP2902-2. (Print C)
600 dpi: Pattern No.13 of SP2902-2
Compare Print B and Print C.
Is Print C better (fewer vertical lines)?
No
Yes
Change SP2109-1 in -4 steps. (This can be repeated up to 10 times.)
Change SP2109-1 in +4 steps. (This can be repeated up to 10 times.)
600 dpi: SP2109-2
Perform SP2109-3.
Perform SP2109-3.
600 dpi: SP2109-4
Print Pattern No. 12 of SP2902-2.
Print Pattern No. 12 of SP2902-2.
600 dpi: No.13 of SP2902-2
No
Did vertical lines disappear?
Did vertical lines disappear?
No
Yes
Yes
If not improved, go to the next page

3. Development Bias Adjustment

(This is to adjust the development bias to an appropriate level for each customer.)


Start
Change SP2210 to 10.
To change interval of the Vsg/Vsp check
Change SP2201-4 to 270.
To start adjustment from 270.
Change SP2201-1 to 550.
To start adjustment from 550.
Increase SP2201-4 by 30.
Perform SP2961.
Developer initialization.
Make 10 A4/LT sideways copies of a test chart.
Has situation improved?
Yes
No
Increase SP2201-1 by 20.
Make 10 A4/LT sideways copies of a test chart.
Has situation improved?
No
Yes
Did you repeat 4 times?
No
Yes
End
Change SP2201-4 back to 270.
Change SP2201-1 back to 550.
Change SP2209 back to 650.
End
There are other causes, such as the drum, transfer belt, developer or toner.

RICOH **Technical Bulletin** **PAGE: 1/1**

Model: SP5/SP5L	Date: 31-Mar-99	No.: 10

Subject: Optics Insulating Sheet is Missing	Prepared by: A. Sasaki
From: GTSS Field Information Dept.	

Classification:
☐ Troubleshooting
☐ Mechanical
☐ Paper path
☐ Other ( )
☐ Part information
☐ Electrical
☐ Transmit/receive
☒ Action required
☐ Service manual revision
☐ Retrofit information

This is to inform you of a possible ‘black copies’ problem.

Symptom

Black copies come out without any service codes and the machine stops with a “Please wait” on screen.

As a second failure resulting from this problem, the SBICU board, xenon lamp flexible board, and two lamp regulators might be damaged.

Cause

The lower insulating sheet P/N A229 1806 is not installed.

The xenon lamp flexible board P/N A229 5463 contacts the frame, the insulation becomes worn over time and then shorts to the frame.

Possible Units

The exact number of possible units is unknown.

Three cases have been reported so far, and all of the cases are for the units produced in the U.S.A.
According to the information from the factories in Japan and the U.S.A., the part is correctly installed during the present production.

It seems that this problem may happen only on a limited number of machines of the SP5 (65 ppm) produced in the U.S.A.

Action Required

Please check that the insulating sheet is installed next visit. If it is not installed, please put insulating tape or a mylar under the flat cable of the xenon lamp flexible board temporarily and install the insulating sheet the next time.

RICOH

Technical Bulletin

PAGE: 1/1

Model: SP5/SP5L	Date: 15-Apr-99	No.: RA229011

Subject: Paper Jams by Paper Feed Clutch (A229-27 only)	Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division	

Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

This is to inform you of a possible problem of a paper jam in Location “A” (No feed).

Symptom

A paper jam occurs just after installation. The jam location is “A”, which means a non-feed. Once it happens, it continues.

Cause

A ring-shaped magnet in the paper feed clutch is out of position due to mis-positioning of the glue.

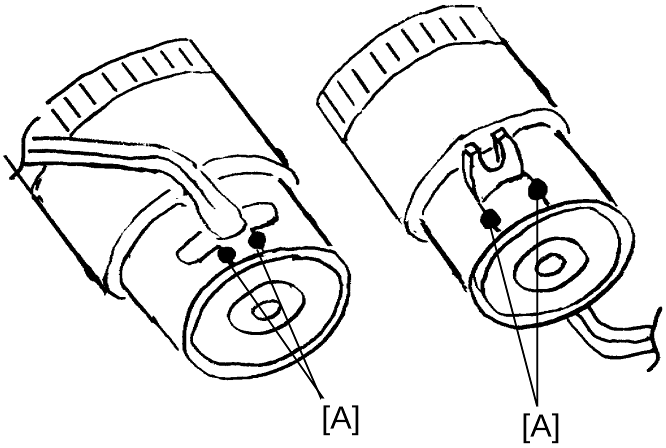
Possible Units

The number of possible units is around six, which is about 2% out of 324 units of the A229-27 model (Ricoh European version) with the serial numbers of A7909030-308 through -641.

Solution in the Field

1. Find the magnet around the clutch. It may be found on the frame on the other side.
2. Put super glue on the inside edges (four points [A]) as shown to fix the magnet into the clutch.

Note: For the Paper Feed Clutch removal procedure, refer to Pages 6-70 through 6-72 in the Service Manual.



Solution on the Production Line

To ensure the firmness of the glue, the number of glue positions has been changed from two to four and an inspection process has been added.

RICOH

Technical Bulletin

Model: SP5/SP5L	Date: 15-Apr-99	No.: RA229012

Subject: Difficulty of Toner Collection Bottle Installation	Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division	

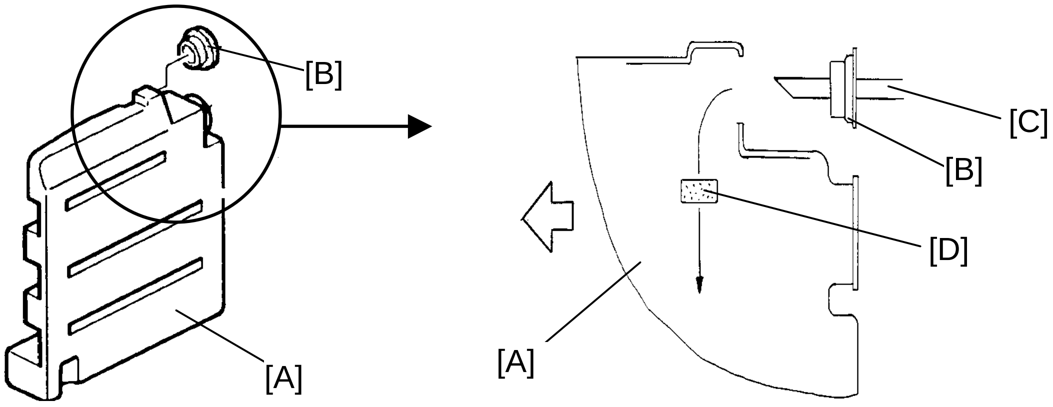
Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

This is to inform you of a possible problem of difficulty with the toner collection bottle installation.

Symptom

When the toner collection bottle is installed, it might not be inserted all the way.

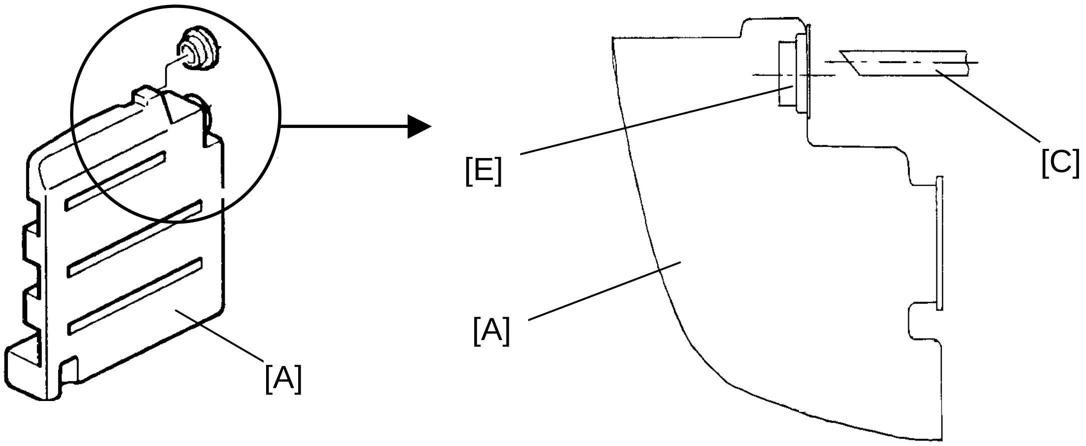
Please note that when removing the bottle [A], the cap [B] of the bottle hole might remain on the nozzle [C] and the sponge seal [D] inside the cap may drop into the bottle.



- Enlargement -

Cause

The positions of the opening [E] in the bottle and the toner collection nozzle [C] are mismatched by a few millimeters due to a production error on the bottle.



- Enlargement -

Model: SP5/SP5L	Date: 15-Apr-99	No.: RA229012

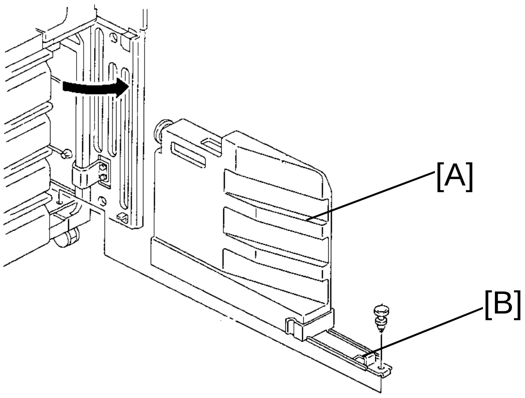
Possible Units

A small proportion out of all units from the first mass production.

Solution in the Field

The bottle can be installed with the following procedure.

1. Hold the bottle [A] with one hand and the bottle holder [B] with the other hand.
2. Push the bottle into the machine.



Solution on the Production Line

The production process of the bottle has been reviewed and corrected.

RICOH

Technical Bulletin

Model: SP5/SP5L	Date: 15-Apr-99	No.: RA229013

Subject: 3rd Tray Lift Motor Malfunction	Prepared by: A. Sasaki
From: GTSS Field Information Dept.	

Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

This is to inform you of a possible 3rd tray lift motor malfunction resulting in the inability to use the tray.

Symptom

The 3rd tray cannot be raised or lowered.

Cause

An IC on the motor control board attached to the lift motor is damaged and the lift motor cannot be controlled.

Static electricity is a possible cause.

Possible Units

The exact number of possible units is unknown. Reports have been provided from several areas.

Countermeasure

To prevent the IC from being damaged, a resistor has been added to the motor control board.

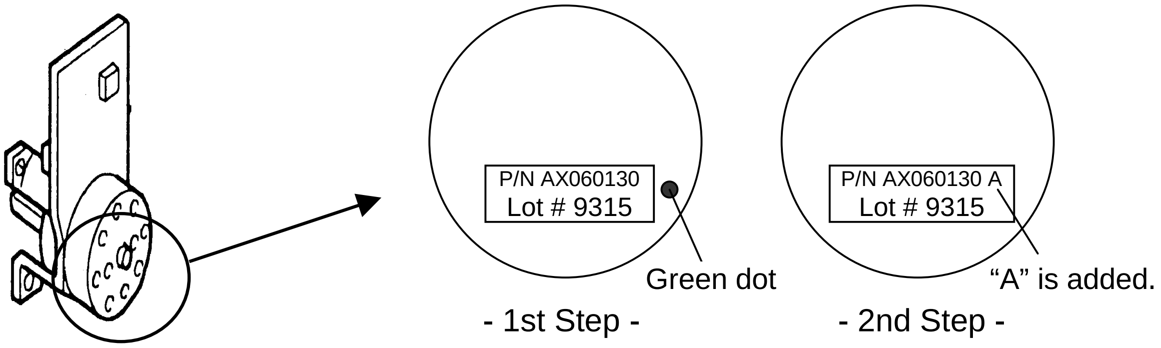
The part number of the motor ass’y AX06-0130 has not been changed.

How to Check New Motors

There were two steps to the modification.

1st Step: A green dot has been added to the right side of the lot number label as shown.

2nd Step: The suffix of the part number has been changed from no suffix (AX060130) to “A” (AX060130 A) on the lot number label as shown.



Cut-in Serial Number

The countermeasure has been applied from the April 1999 production.

Service parts have already been changed to the new motors.

RICOH **Technical Bulletin** **PAGE: 1/2**

Model: SP5/SP5L	Date: 15-Apr-99	No.: RA229014

Subject: Service Manual Correction	Prepared by: M. Tsuyuki
From: GTSS Field Information Dept.	

Classification:	☐ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☒ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

Please correct your service manual as follows.

SP2201-2 (page 4-15)

Incorrect:

Factory setting: -360V

Correct:

Factory setting: -390V

NOTE: The above setting has been changed from November or December production of 1998. See RTB 9 for details.

SP7-808

Incorrect:

Resets the following counters. Press “Start” to reset.

- All counters of SP7-003
- All counters of SP7-006
- All counters which are listed on the counter list (UP1-19-2)

Correct:

Resets all counters except for the following counters. Press “Start” to reset.

- All counters of SP7-003
- All counters of SP7-006
- All counters which are printed on the counter list. This list is printed with “Total Counter” in “User Tools/Counter” menu.

SC621 (Page 7-21)

Please delete SC621 from your service manual and add the following two SCs (SC621-1 and 2).

SC621-1: Communication error between SBICU board and Finisher.

-Definition- [B]

If ACK does not return within 100 ms after data has been sent from the SBICU board to the finisher, the data is resent. However, data has been has been sent three times, and ACK has not been reteurned.

-Possible Cause-

- Poor connection between the SBICU board and the finisher main board
- Finisher main board defective
- SBICU board defective

SC621-2: Communication error between SBICU board and Finisher.

-Definition- [B]

During communication between the finisher main board and the SBICU board, a break signal is sent from the finisher main board.

-Possible Cause-

- Poor connection between the SBICU board and the finisher main board
- Finisher main board defective
- SBICU board defective

RICOH

Technical Bulletin

Model: SP5/SP5L	Date: 15-Aug-99	No.: RA229015

Subject: Light Copies	Prepared by: A. Sasaki
From: GTSS Field Information Dept.	

Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

This bulletin will explain the recommended procedure for increasing the image density of copies (in particular, the density of black solid areas on the left and right sides).

Symptom

1. The image density is low at installation.
2. The image density decreases during a continuous copy run.
3. Copies have lower image density on the left and right sides than in the middle.

There is no problem with text areas.

Possible Cause

The symptoms described above are caused by a combination of the following:

1. As announced by RTB No. 9, the factory settings of some SP modes have been changed to minimize the dirty background.
   These changes may affect the image density if originals with a high percentage of black area and/or with black solid area at any of the sides are used.
2. The value of the toner supply ratio set in the SP mode is too low with respect to the average percent of black area in the originals used.
3. The base toner control level in the development unit is set lower than the expected image density level.

Action Required

Please adjust the toner supply ratio and the bias voltages for the ID sensor pattern and for the image by following the adjustment procedure on the following pages.

Note

There might be some visible differences in half-tone areas and gray pattern areas between the first copy and the other copies in a copy run.

This is because uncompressed data is used for the first copy and compressed data stored in the hard disk is used for the other copies.

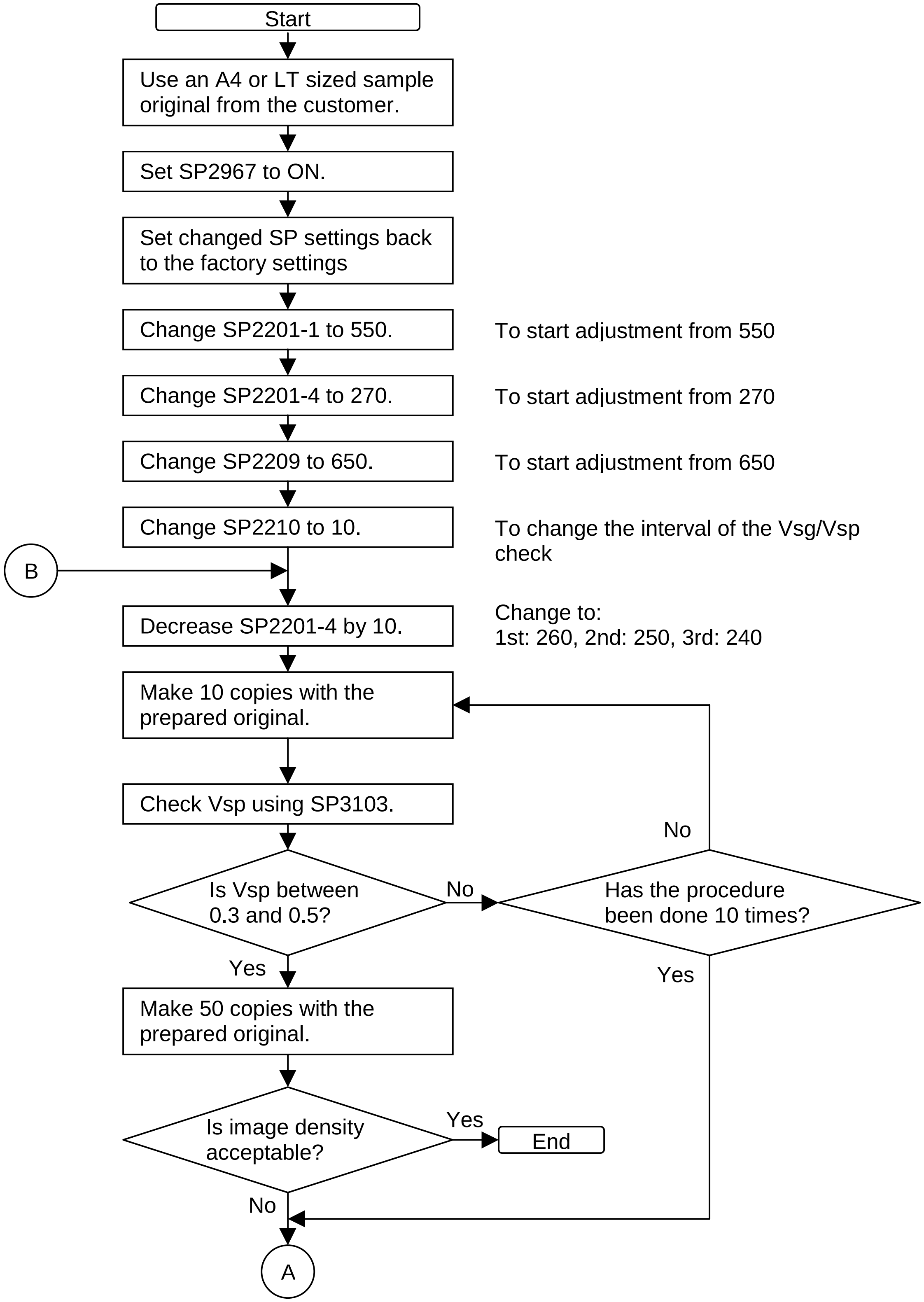
Serial Numbers of Machines

The following machines have the new factory settings of some SP modes.

Please refer to RTB No. 9 for the details.

Model Code	Serial Number	Brand
A229-10	2B49410001	Savin/Gestetner
A229-17	A7909410036	Ricoh
A229-22	AS78120001	Gestetner/Nashuatec/Rex Rotary
A229-26	3R31280001	Infotec
A229-27	A7908120001	Ricoh
A229-29	A7908120110	Ricoh
A229-50	From first production	Savin/Gestetner
A229-54	From first production	Lanier
A229-55	From first production	Lanier
A229-57	From first production	Ricoh
A229-59	From first production	Ricoh
A229-62	From first production	Gestetner/Nashuatec/Rex Rotary
A229-64	From first production	Lanier
A229-65	From first production	Lanier
A229-66	From first production	Infotec
A229-67	From first production	Ricoh

Adjustment Procedure


Start
Use an A4 or LT sized sample original from the customer.
Set SP2967 to ON.
Set changed SP settings back to the factory settings
Change SP2201-1 to 550.
Change SP2201-4 to 270.
Change SP2209 to 650.
Change SP2210 to 10.
B
Decrease SP2201-4 by 10.
Make 10 copies with the prepared original.
Check Vsp using SP3103.
Is Vsp between 0.3 and 0.5?
No
Has the procedure been done 10 times?
No
Yes
Yes
Make 50 copies with the prepared original.
Is image density acceptable?
Yes
End
No
A

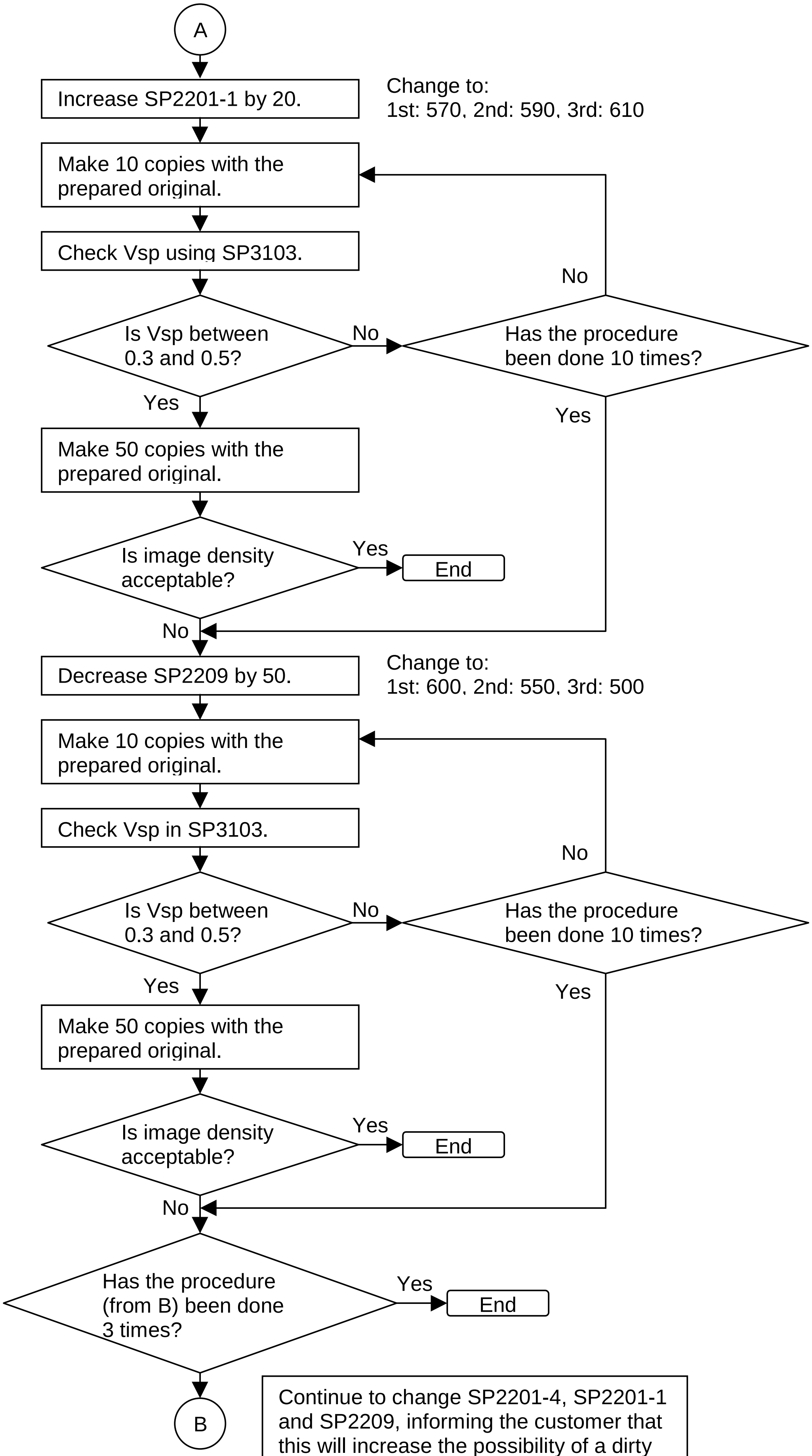
To start adjustment from 550

To start adjustment from 270

To start adjustment from 650

To change the interval of the Vsg/Vsp check

Change to:
1st: 260, 2nd: 250, 3rd: 240


A
Increase SP2201-1 by 20.
Make 10 copies with the prepared original.
Check Vsp using SP3103.
Is Vsp between 0.3 and 0.5?
No
Has the procedure been done 10 times?
No
Yes
Yes
Make 50 copies with the prepared original.
Is image density acceptable?
Yes
End
No
Decrease SP2209 by 50.
Make 10 copies with the prepared original.
Check Vsp in SP3103.
Is Vsp between 0.3 and 0.5?
No
Has the procedure been done 10 times?
No
Yes
Yes
Make 50 copies with the prepared original.
Is image density acceptable?
Yes
End
No
Has the procedure (from B) been done 3 times?
Yes
End
B

Change to:
1st: 570, 2nd: 590, 3rd: 610

Change to:
1st: 600, 2nd: 550, 3rd: 500

Continue to change SP2201-4, SP2201-1 and SP2209, informing the customer that this will increase the possibility of a dirty background appearing.

RICOH

Technical Bulletin

Model: SP5 / SP5L	Date: 31-Aug-99	No.: RA229016

Subject: Exposure Lamp	Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division	

Classification:

☐ Troubleshooting
☐ Mechanical
☐ Paper path
☐ Other (   )
☐ Part information
☐ Electrical
☐ Transmit/receive
☒ Action required
☐ Service manual revision
☐ Retrofit information

Symptom

The first page is blank and SC101 is displayed.

This symptom is limited to the first sheet after turning on the power. However, even on the same machine, this problem does not occur every time the power is turned on.

Cause

The amount of light from the exposure lamp is insufficient.
If making a copy when the lamp is abnormally slow in reaching the ready status, the lamp is not able to produce the required amount of light within the given regulated time period. The source of the problem has been identified as defective internal components in lamps that were produced in March 1999 (and is therefore limited to these lamps).

Action Required

The lamps produced in March were installed in machines produced in March, April and May, 1999. If any machines have serial numbers matching those listed on the last page of this RTB, please check the exposure lamp lot number by following the procedure described below. If the lamps have lot numbers beginning with 39X, please replace them. The number will be 39X, where 39 indicates a March 1999 production date and X indicates the actual day on which the lamp was produced. Each month is assigned a different lot number (continuing from “37” in Jan. 1999). Therefore, January 1999 is “37”, February =”38”, and March=”39”. This information can be found printed in black on the black lamp cap at the rear side (and therefore may be difficult to read).

Procedure for checking the exposure lamp lot numbers (and replacement, if necessary):

1. Remove the exposure glass.
2. Slide the 1st scanner to the cutout in the rear scanner frame.
3. Read the lot number printed on the lamp cap.
4. If the first two digits of the lot number are 39, replace the exposure lamp.

< Serial Numbers of Targeted Machines >

Model Code	Number of Unit	March production	April production	May production
A229-22	325	AS79030153 - 253	AS79040001 - 220	-
A229-26	155	-	3R30490001 - 155	-
A229-27	1,060	A7909030765 - 1000	A7909040001 - 824	-
A229-50	440	2B49030001 - 240	3B89040001 - 200	-
A229-54	145	-	L0469040001 - 145	-
A229-55	398	-	L0339041621 - 2018	-
A229-57	820	A7909031533 - 2352	-	-
A229-59	15	A7909032353 - 2367	-	-
A229-62	110	-	B129040001 - 110	-
A229-64	67	L0339031341 - 400	L0469040146 - 152	-
A229-65	80	-	L0339042019 - 98	-
A229-66	69	-	3U20490001 - 69	-
A229-67	961	A7909031001 - 1532	A9049040001 - 429	-
A229-17	1,964	A7909430661 - 1080	A7909440001 - 1105	A7909450001 - 440
A229-10	636	-	2B49440001 - 430	2B49450001 - 206
	7,245			

RICOH **Technical Bulletin**

Model: 3000 Finisher for SP5/SP5L	Date: 15-Oct-99	No.: RA229017

Subject: SC621	Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division	

Classification:

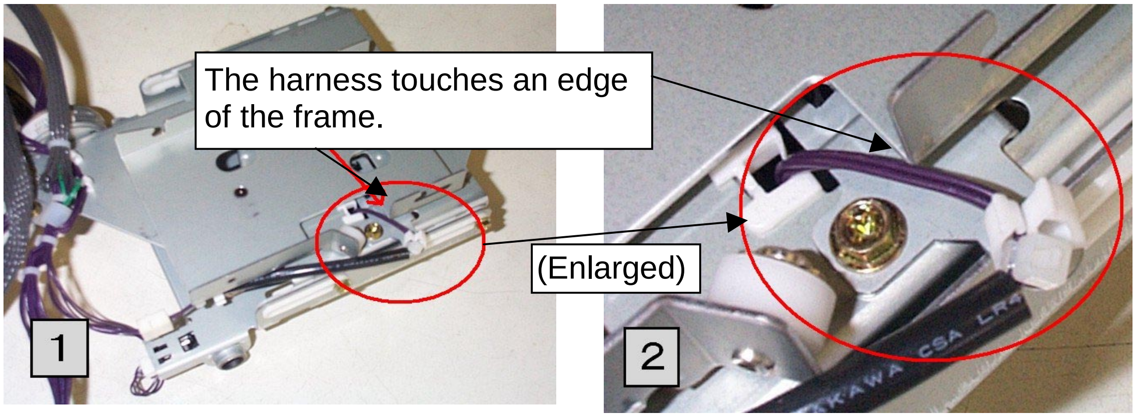
☒ Troubleshooting	☐ Part information	☐ Action required
☐ Mechanical	☐ Electrical	☐ Service manual revision
☐ Paper path	☐ Transmit/receive	☐ Retrofit information
☐ Other ( )		

Symptom

SC621 is generated during copy cycle.

Cause

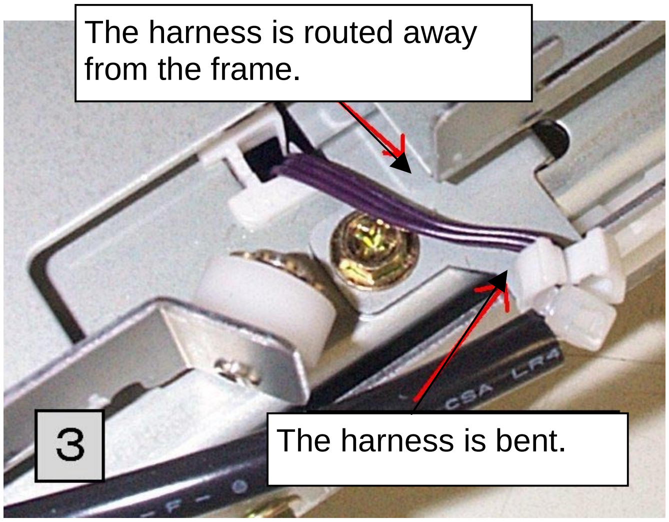
The stapler rotation HP sensor harness shorts to the frame


The harness touches an edge of the frame.
(Enlarged)
1
2

Temporary Solution in Production

The routing of the harness has been changed as shown in the photo. This can be done in the field.

The cut-in serial numbers are as follows:
A697-15: 1B59060001
A697-17: A7779051901
A697-22: AR39050649
A697-26: 3R10690001
A697-55: L0329064175


The harness is routed away from the frame.
3
The harness is bent.

Final Solution in Production

A tape wrapping the harness has been added to the place where the harness touches the frame and the frame has been changed to make the edge smoother.

The cut-in serial numbers are as follows:
A697-15: 1B59070001
A697-17: A7779061601
A697-22: AR39060271
A697-26: 3R10690276
A697-55: L0329074795

SP5 (A229)

PARTS CATALOG

First Edition June 1998

RICOH COMPANY LTD.

PARTS CATALOG

INTRODUCTION

This chapter instructs you the numbers and names of parts on this machine.

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SP5	**(A229)**
RT37	**(A698)**
SR730	**(A697)**

SP5 (A229)

PARTS CATALOG

INTRODUCTION

This chapter instructs you the numbers and names of parts on this machine.

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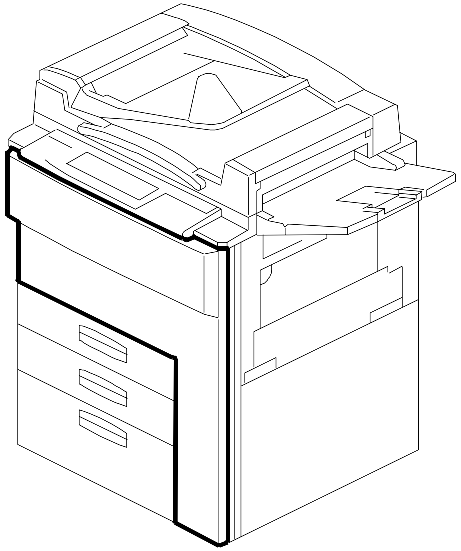
1.Exterior 1 (A229)



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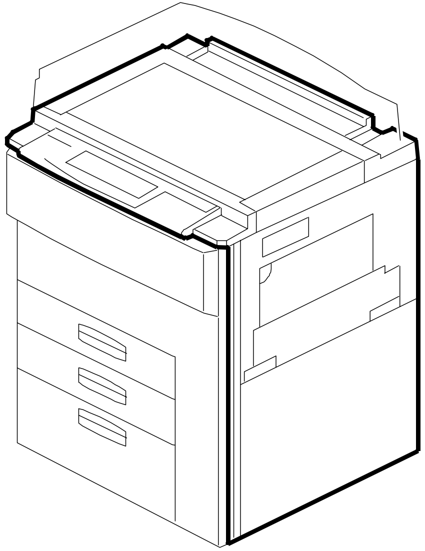
2.Exterior 2 (A229)



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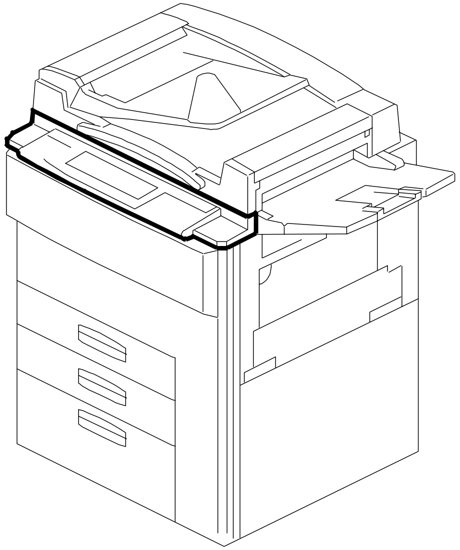
3.Operation Panel (A229)



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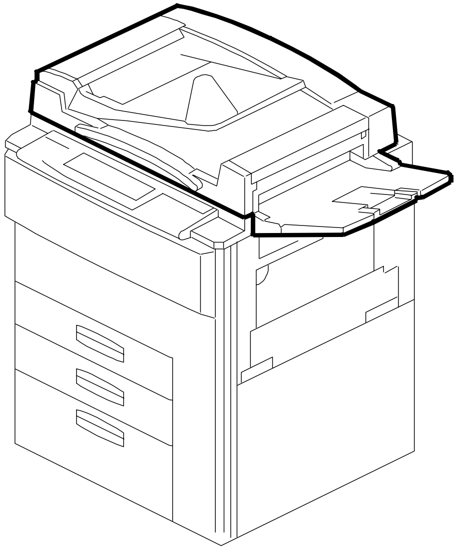
4.DF Exterior (A229)



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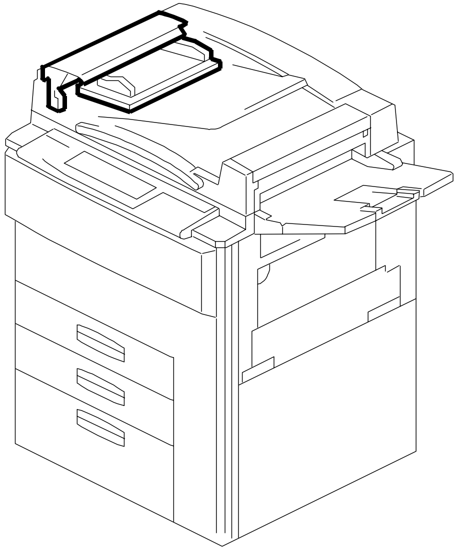
5.Original Feed 1 (A229)



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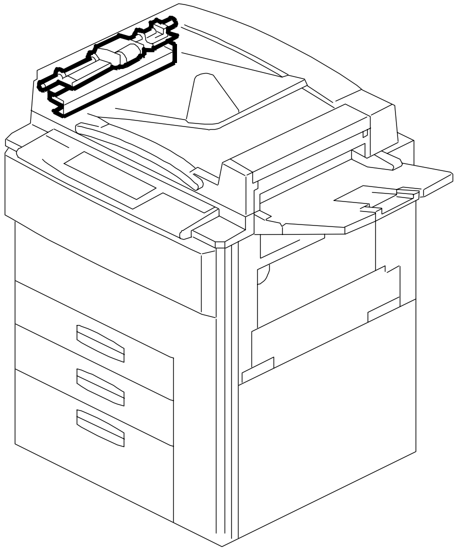

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Location of Unit

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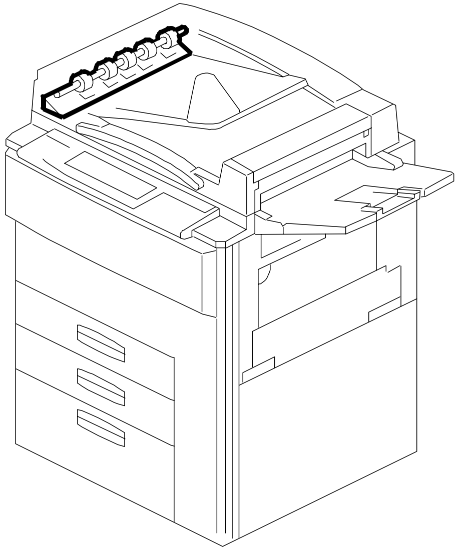

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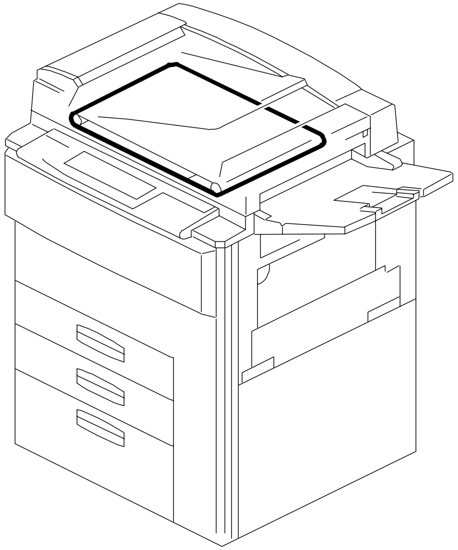
8.Original Transport (A229)



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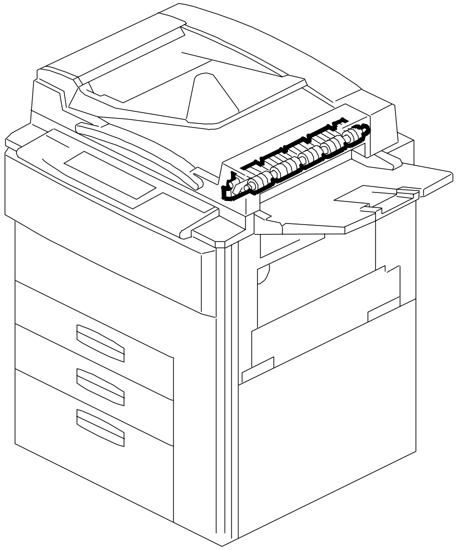
9.Original Exit 1 (A229)



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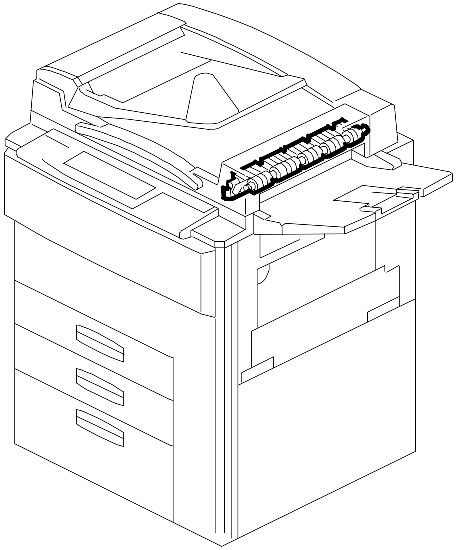

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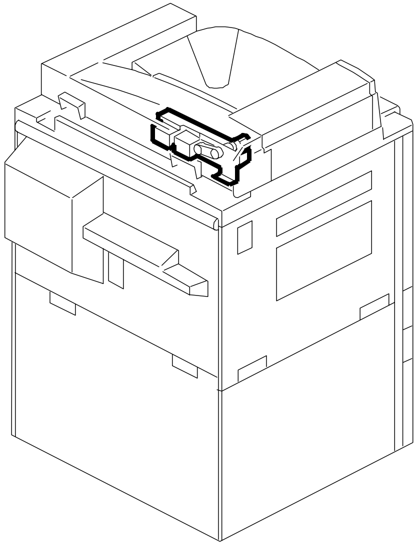
11.DF Drive Section 1 (A229)



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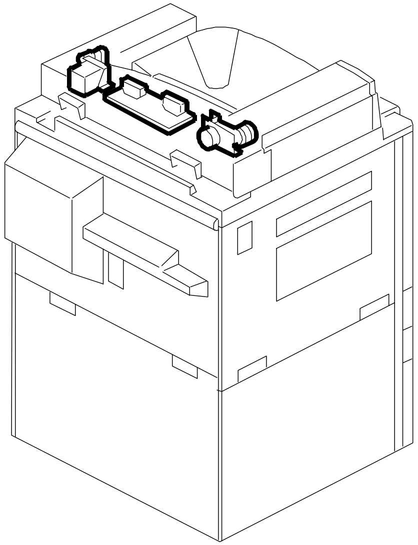

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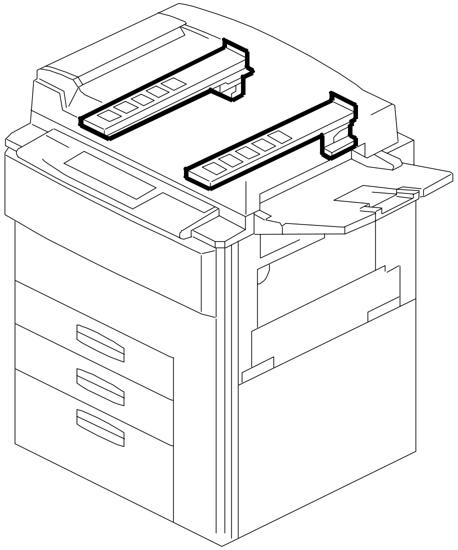
13.DF Frame Section (A229)



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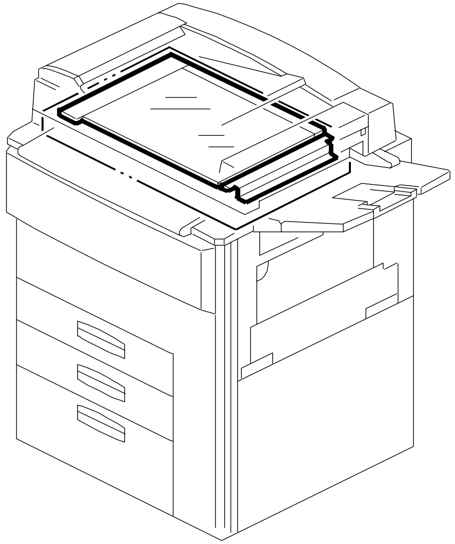
14.Optics Section 1 (A229)



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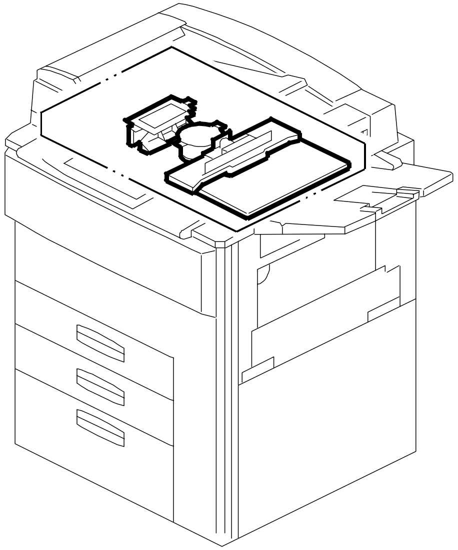
15.Optics Section 2 (A229)



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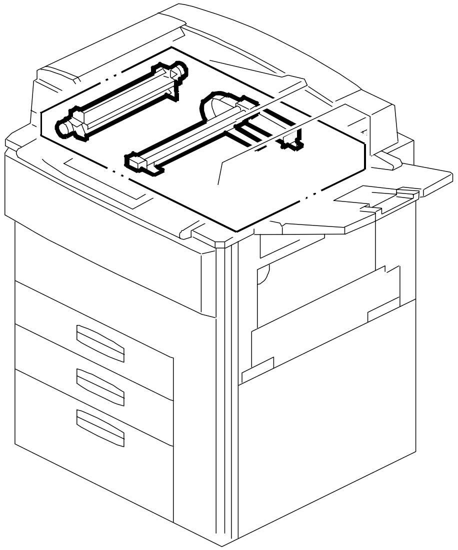
16.Optics Section 3 (A229)



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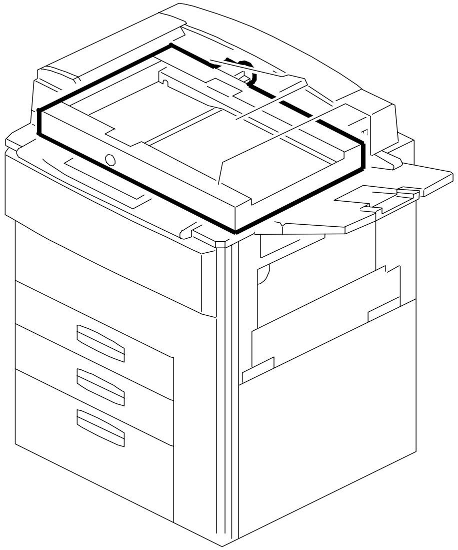
17.Optics Section 4 (A229)



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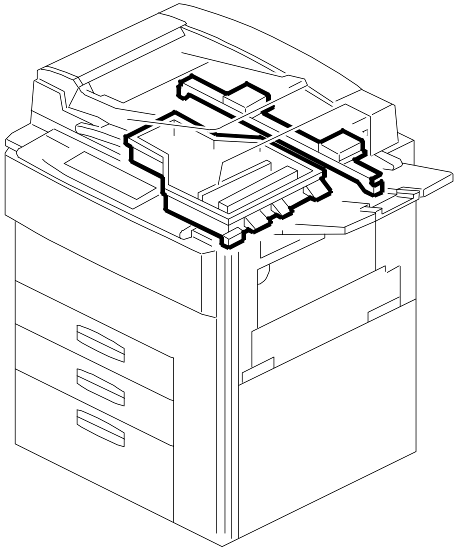
18.Laser Unit (A229)



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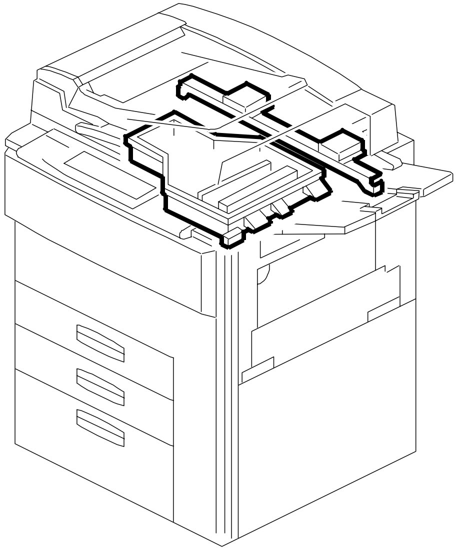
19.By-pass Feed Unit (A229)



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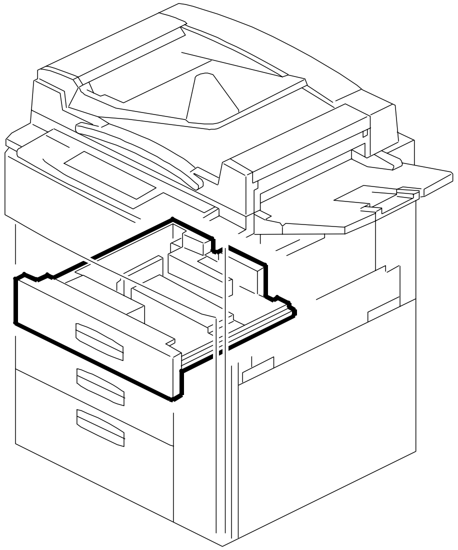
20.Tandem Tray 1 (A229)



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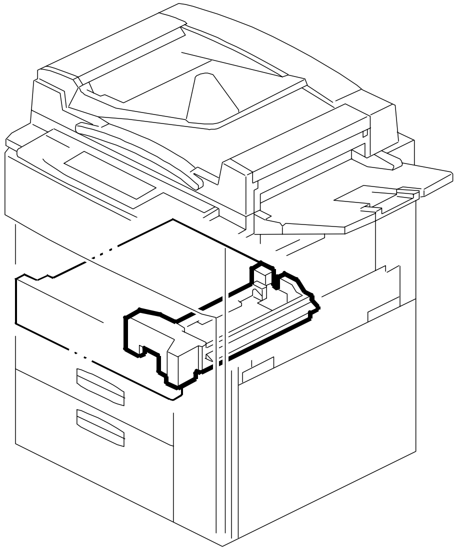
21.Tandem Tray 2 (A229)



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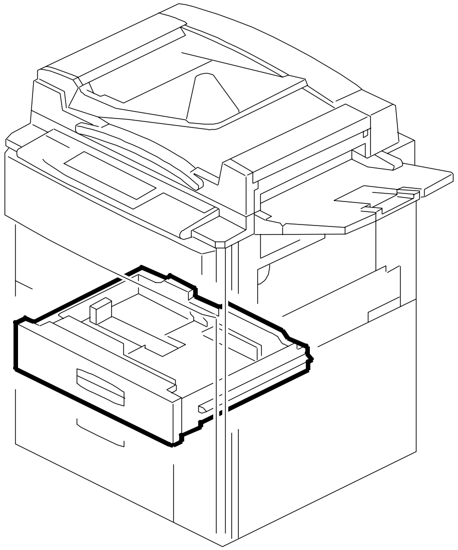
22.Universal Tray (A229)



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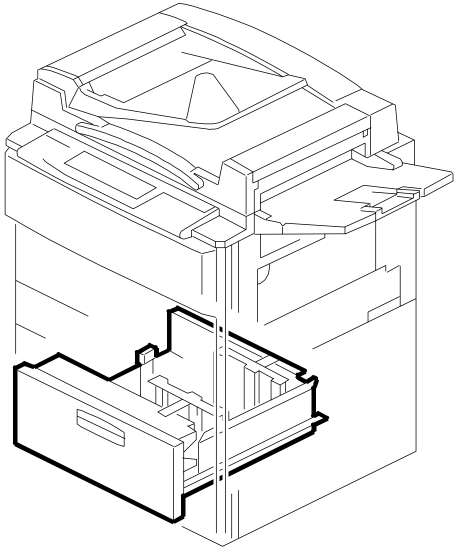
23.LCT Tray 1 (A229)



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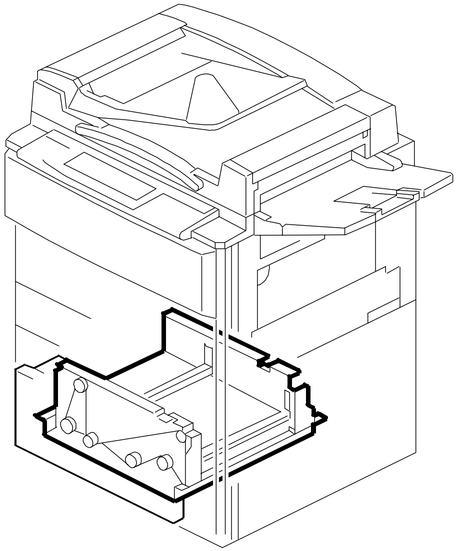
24.LCT Tray 2 (A229)



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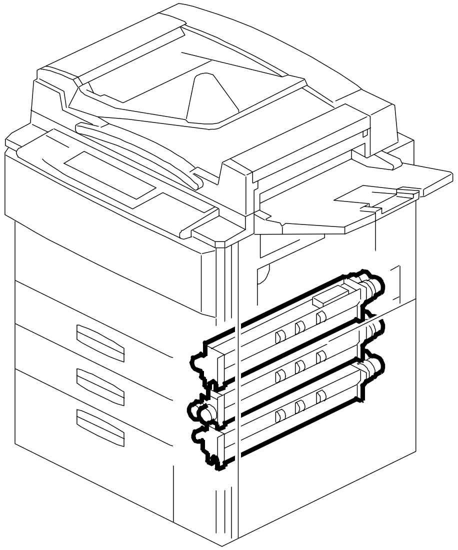
Location of Unit

25.Paper Feed Unit 1 (A229)



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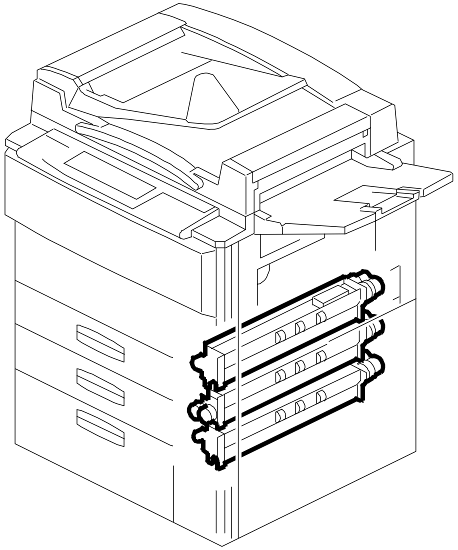
26.Paper Feed Unit 2 (A229)



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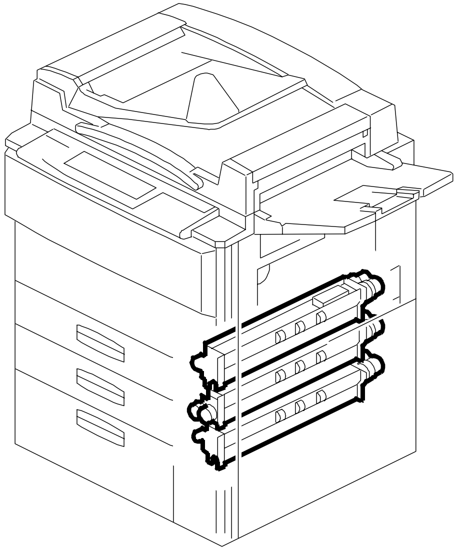
27.Paper Feed Unit 3 (A229)



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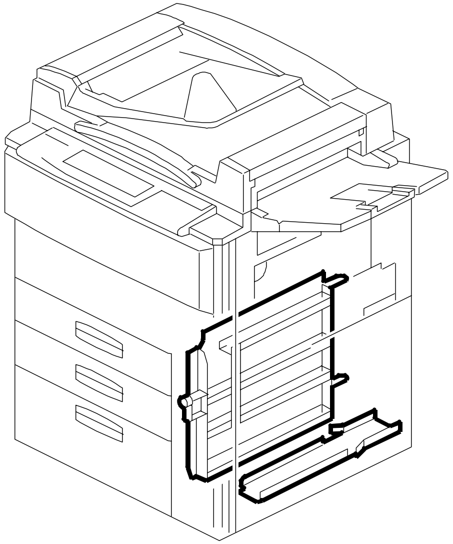
28.Vertical Transport (A229)



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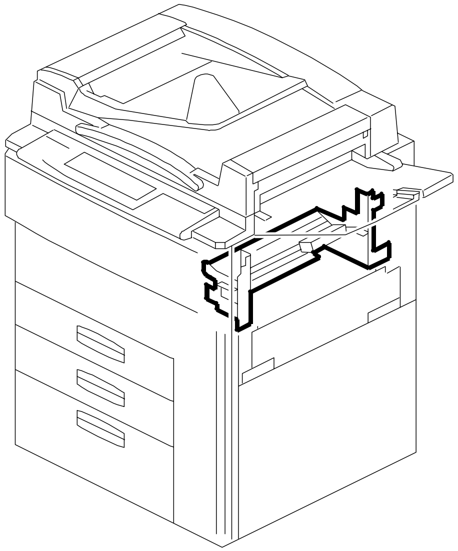
29.Paper Registration 1 (A229)



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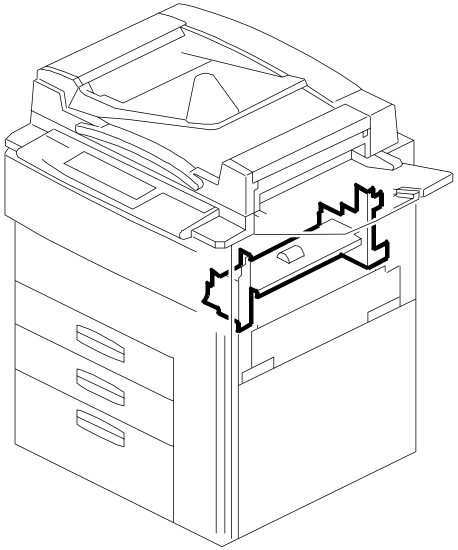

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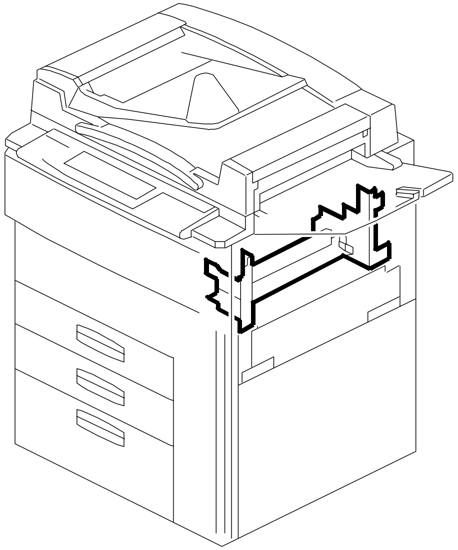
31.Paper Registration 3 (A229)



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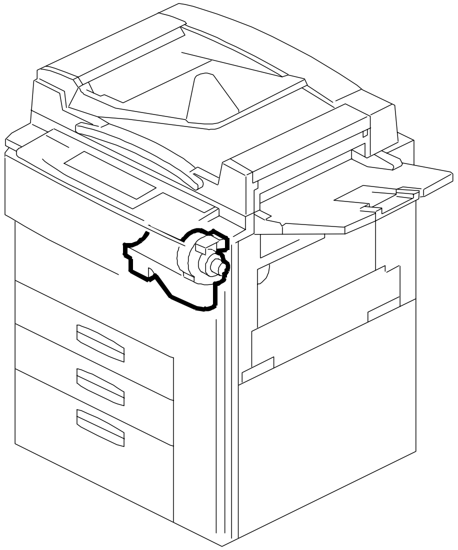
32.Toner Bottle Holder (A229)



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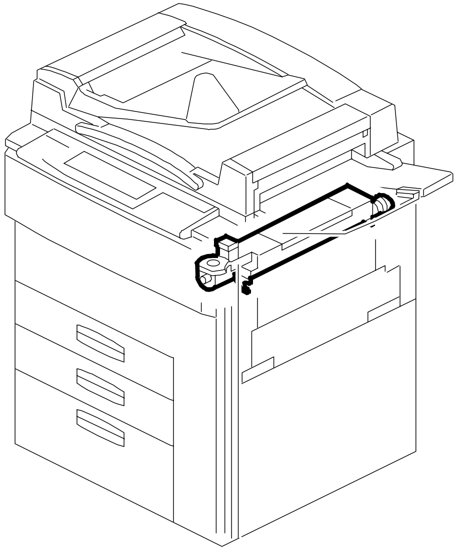
33.Toner Hopper Section (A229)



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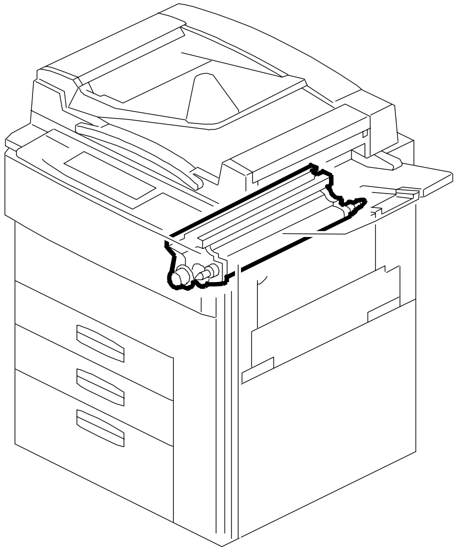
34.Development Unit 1 (A229)



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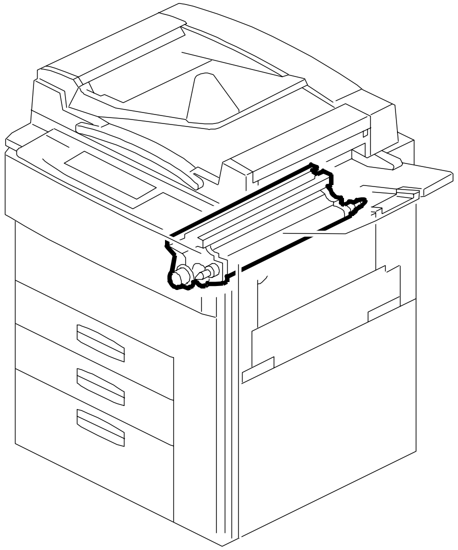
35.Development Unit 2 (A229)



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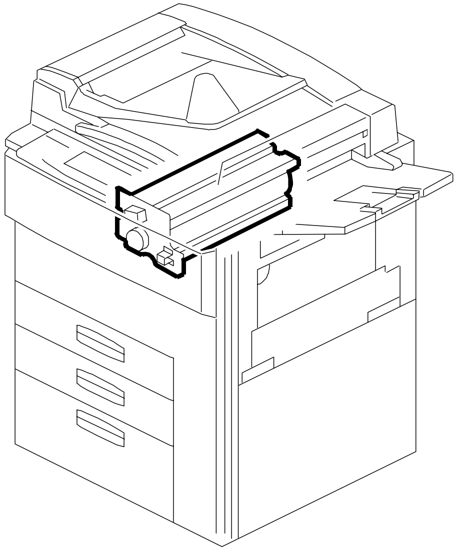
36.PCU 1 (A229)



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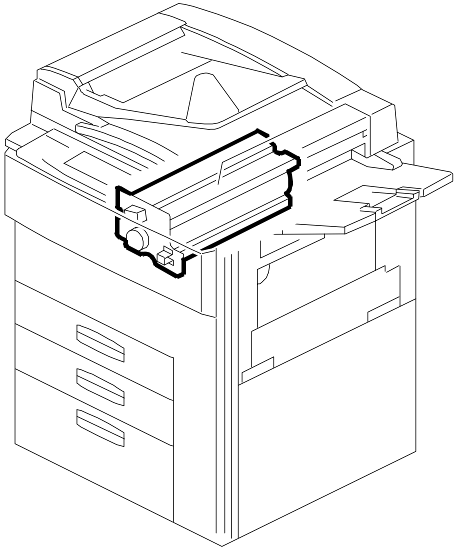
Location of Unit

37.PCU 2 (A229)



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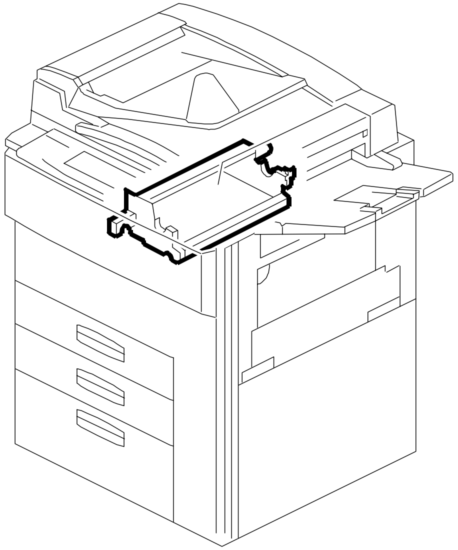
38.PCU 3 (A229)



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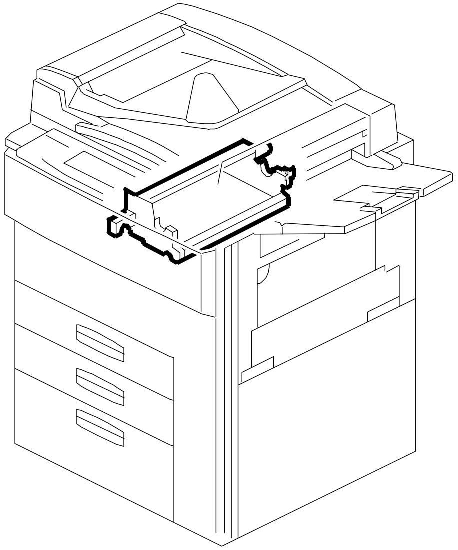
39.PCU 4 (A229)



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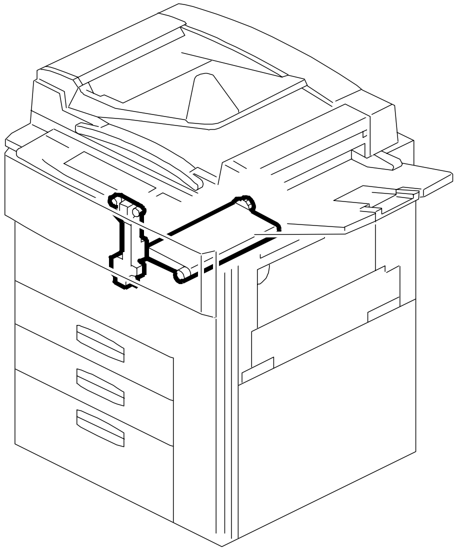
40.Transfer Belt Unit 1 (A229)



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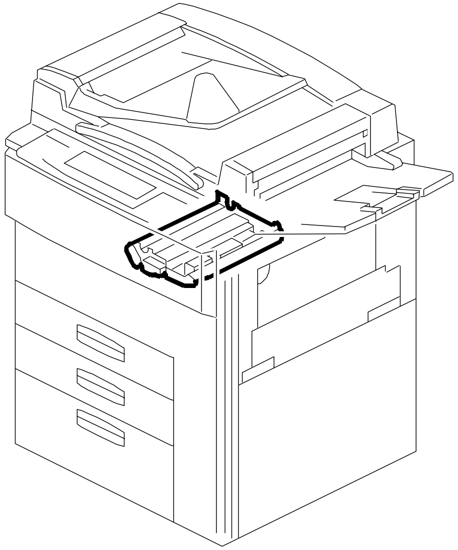
41.Transfer Belt Unit 2 (A229)



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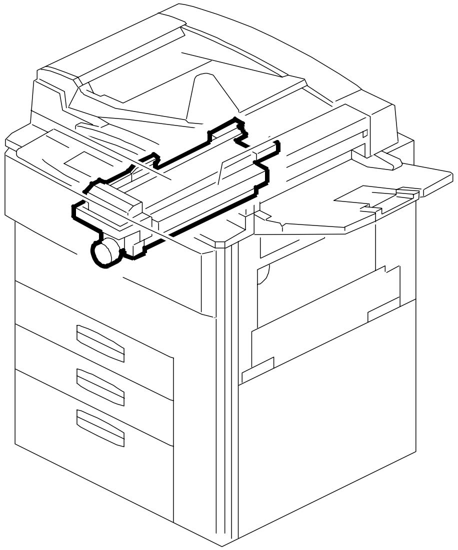
42.Fusing Unit 1 (A229)



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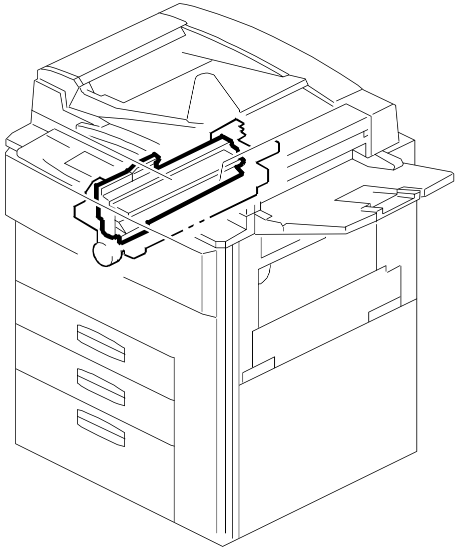
Location of Unit

43.Fusing Unit 2 (A229)



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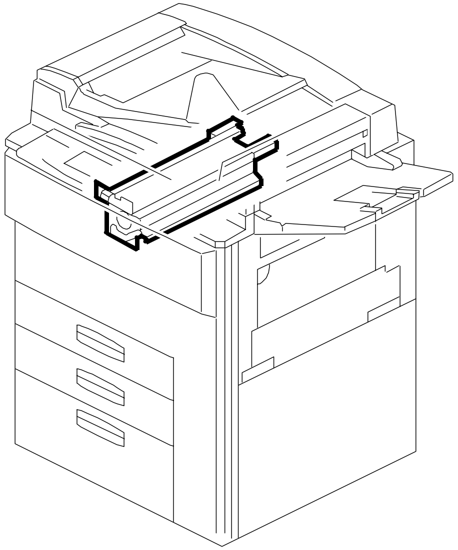
44.Fusing Unit 3 (A229)



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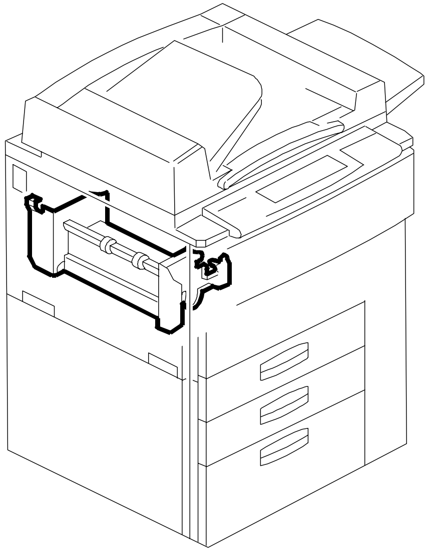
45.Paper Exit Unit 1 (A229)



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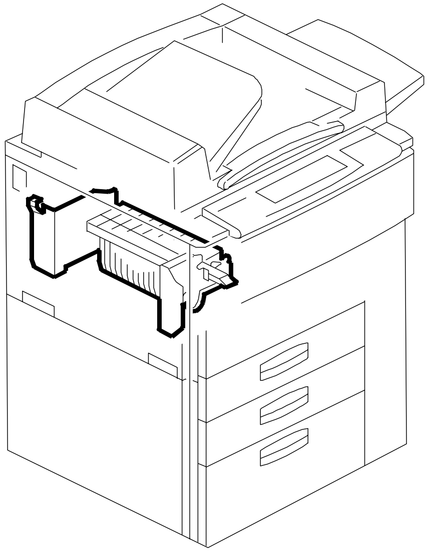
46.Paper Exit Unit 2 (A229)



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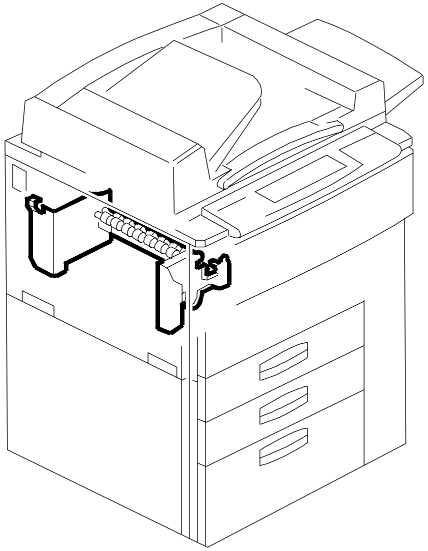
47.Paper Exit Unit 3 (A229)



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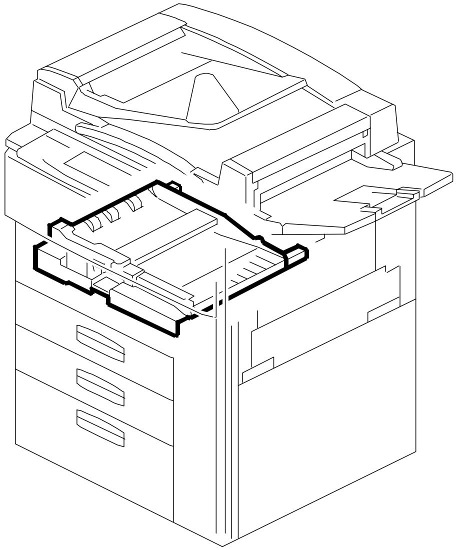
48.Inverter/Duplex Unit 1 (A229)



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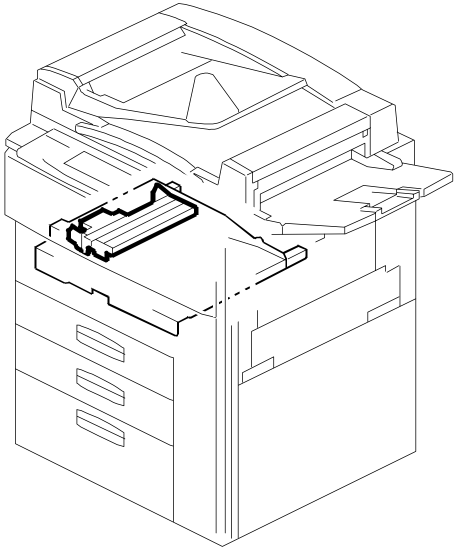
Location of Unit

49.Inverter/Duplex Unit 2 (A229)



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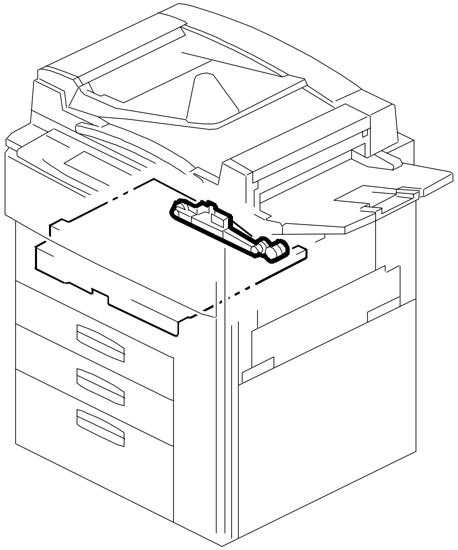
50.Inverter/Duplex Unit 3 (A229)



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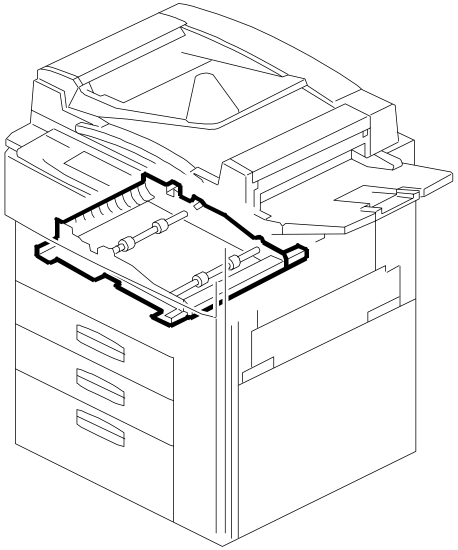
51.Inverter/Duplex Unit 4 (A229)



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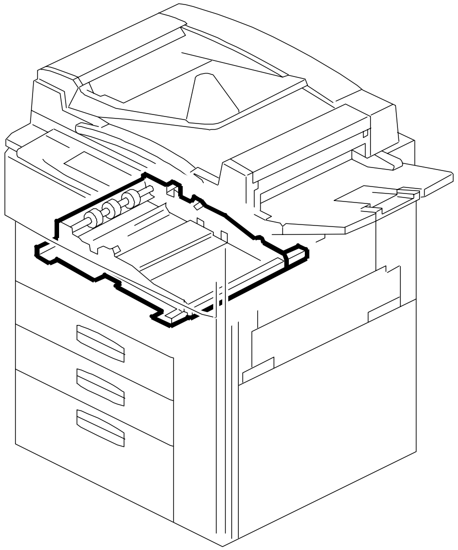
52.Inverter/Duplex Unit 5 (A229)



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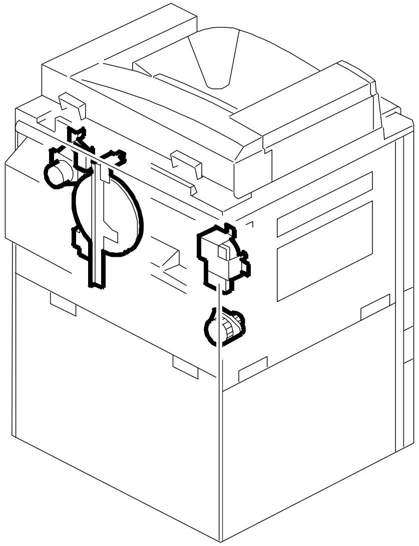
53.Drive Section 1 (A229)



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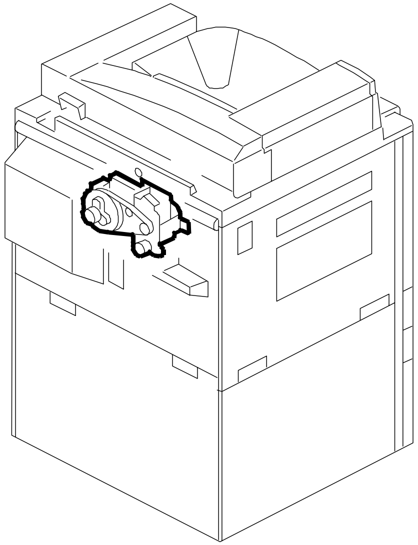
54.Drive Section 2 (A229)



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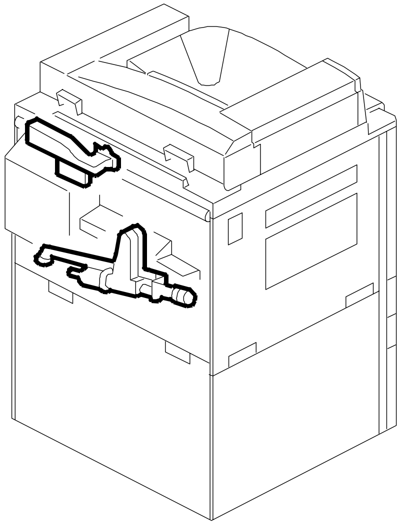
Location of Unit

55.Drive Section 3 (A229)



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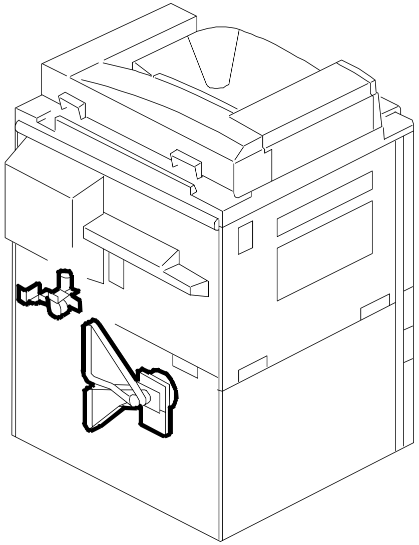
56.Drive Section 4 (A229)



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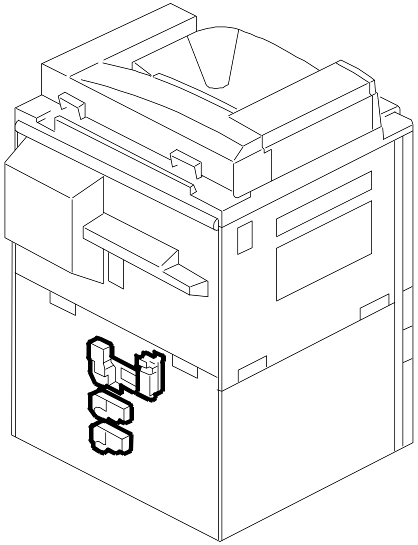
57.Drive Section 5 (A229)



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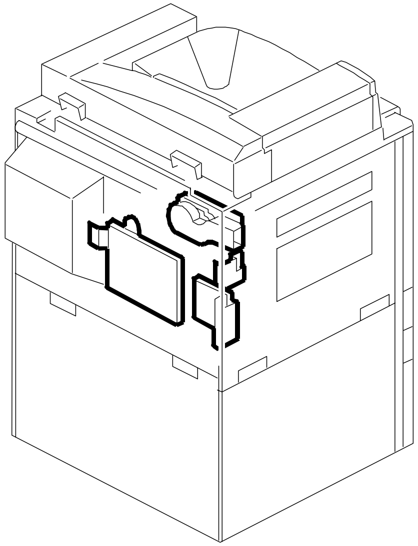
58.Electrical Section 1 (A229)



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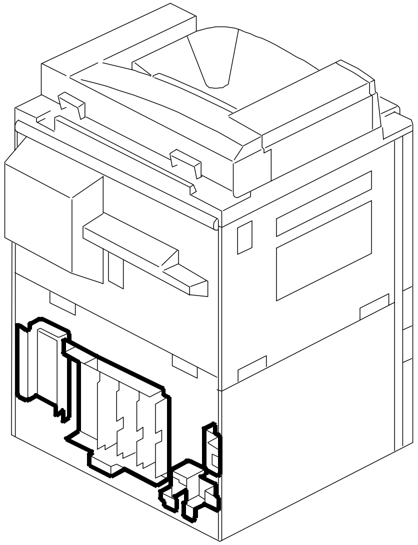
59.Electrical Section 2 (A229)



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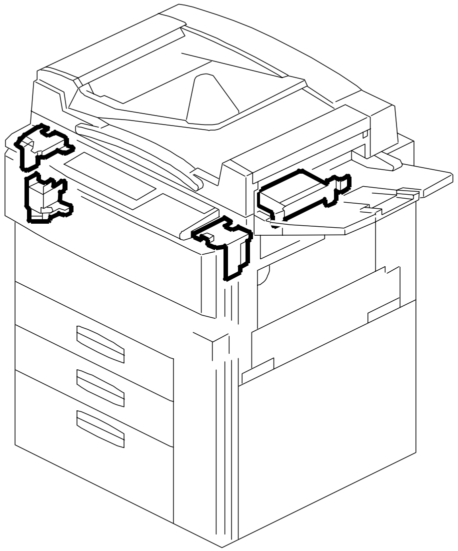
60.Electrical Section 3 (A229)



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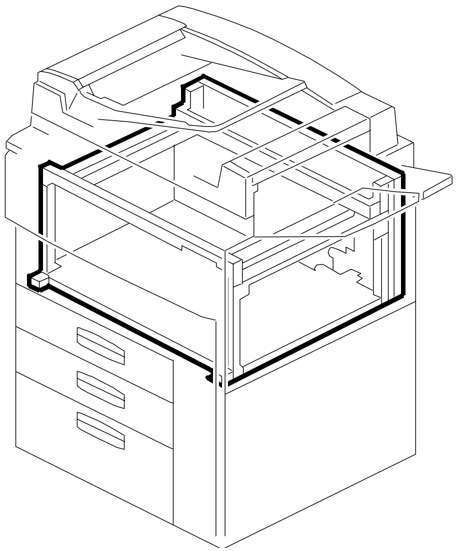
Location of Unit

61.Frame Section 1 (A229)



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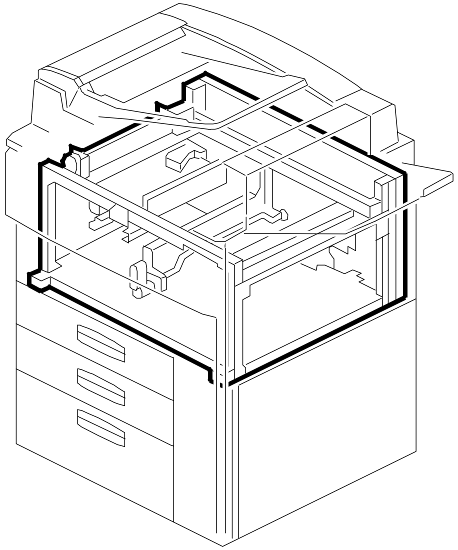
62.Frame Section 2 (A229)



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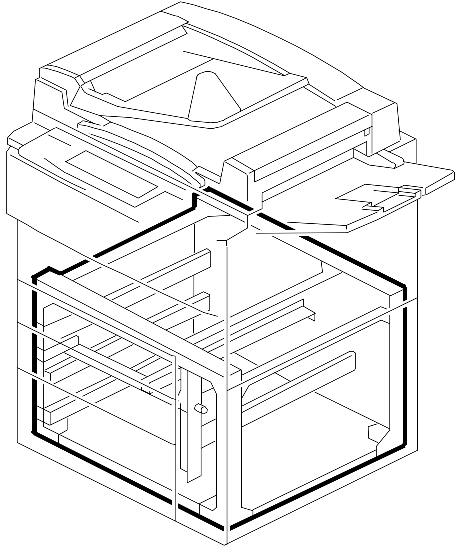
63.Frame Section 3 (A229)



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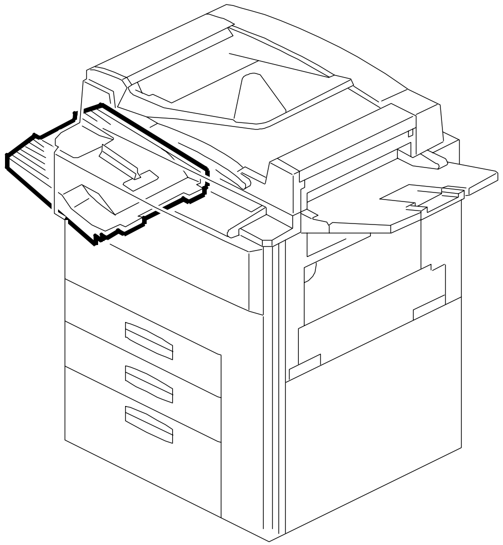
64.Option Exit Tray (A814)



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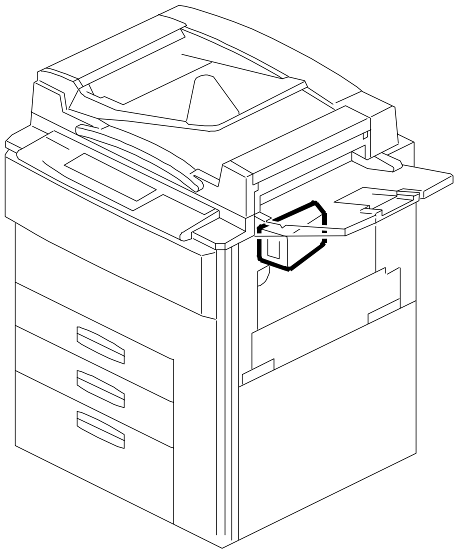
65.Key Counter unit (A674)



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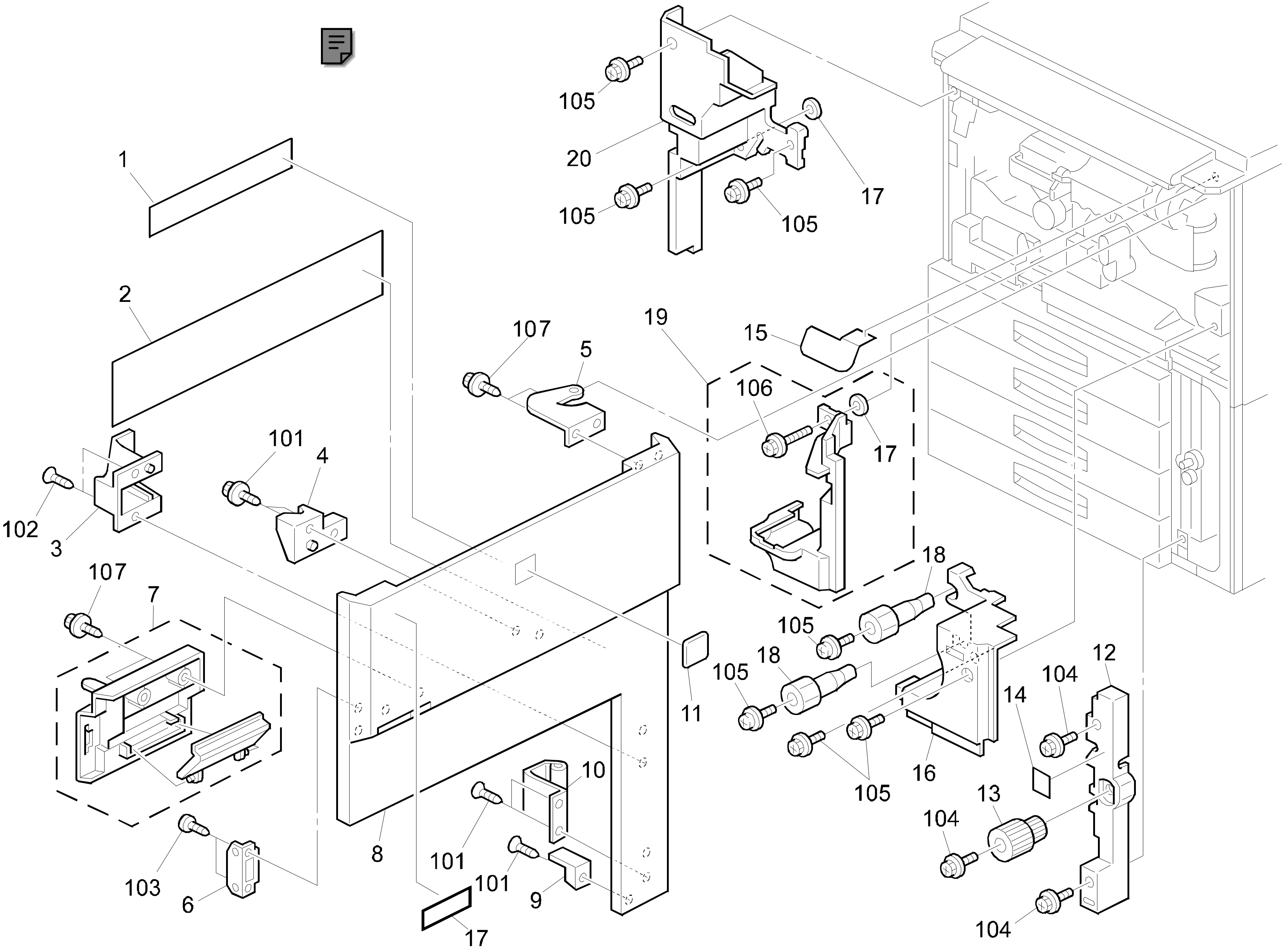
1.Exterior 1 (A229)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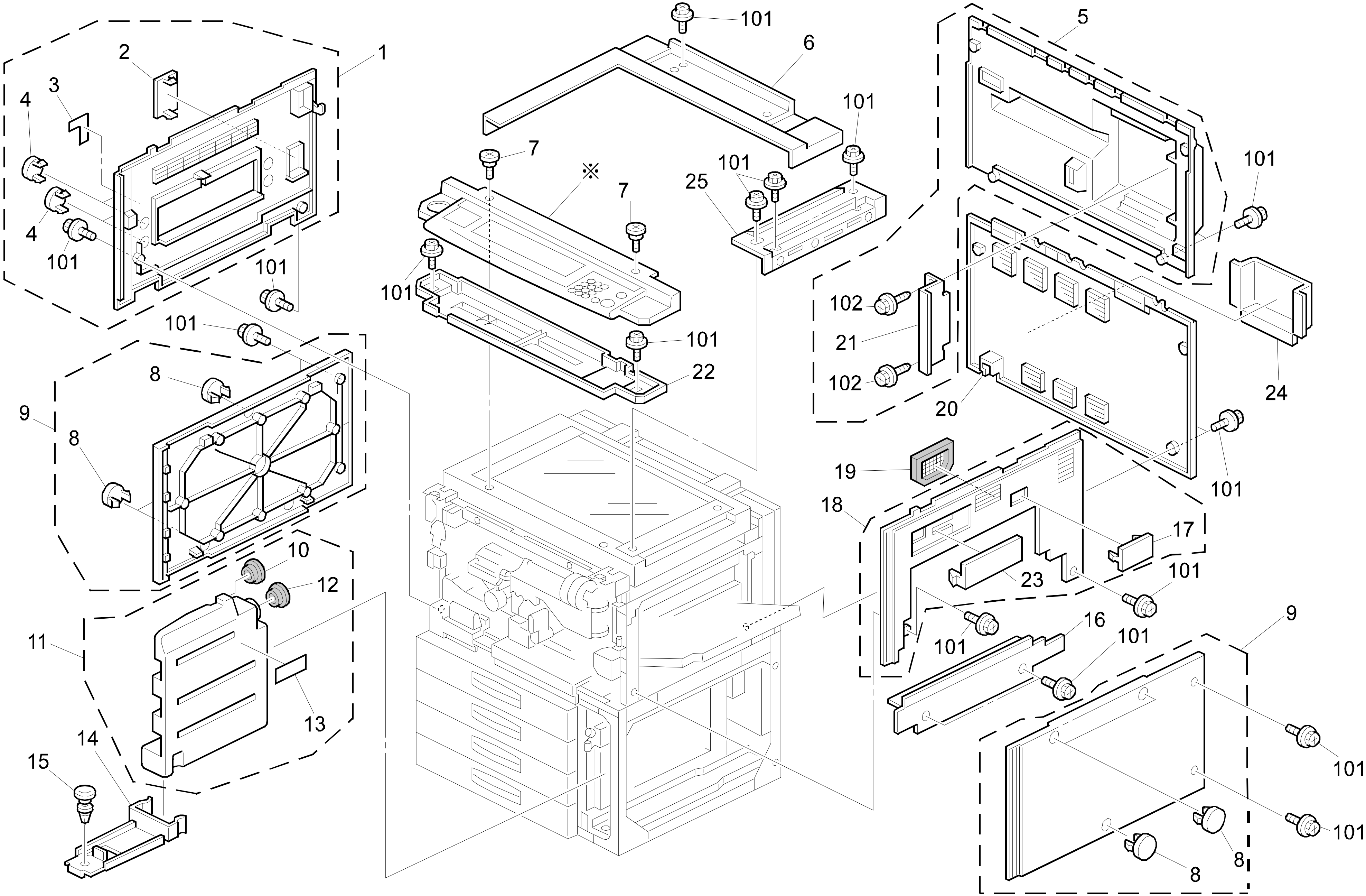
1.Exterior 1 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 1349	Decal - Toner Supply	1
2	A229 1350	Decal - Misfeed Removal	1
3	A229 1275	Guide Plate Lever	1
4	A229 1347	Fusing Unit Lever Feeler	1
5	A229 1342	Upper Hinge	1
6	AG07 0004	Magnetic Catch	1
7	A229 1257	Door Grip Ass'y	1
8	A229 1253	Front Door (RIC)	1
8	A229 1302	Front Door (SVN/NRG	1
8	A229 1241	Front Door (INF)	1
9	A229 1355	Micro Switch Lever	1
10	A229 1259	Lower Hinge	1
11	A134 1383	Emblem (RIC)	1
11	A229 7016	Support Cover (INF)	1
12	A096 6184	Bank Inner Cover	1
13	AG05 0067	Knob - Transport Roller	1
14	AA00 0540	Decal - Misfeed Removal	1
15	A229 3298	Pawl Cover Sheet	1
16	A229 1320	Right Lower Inner Cover	1
17	A229 7010	Model Name Plate - GES 3265	1
17	A229 7011	Model Name Plate - NSA D465	1
17	A229 7012	Model Name Plate - REX 2865	1
17	A229 7013	Model Name Plate - SVN 9965DP	1
17	A229 7015	Model Name Plate - 170X60 NRG	1
18	A060 2512	Registration Roller Knob	2
19	A229 3290	Right Inner Cover	1
20	A229 1321	Safty Switch Inner Cover	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0450 4008B	Tapping Screw - 4x8	
102	0802 5124	Tapping Screw - M3x8	
103	0434 0082W	Tapping Screw - M4x8	
104	0951 4006B	Philips Screw With Washer - M4x6	
105	0451 4008B	Philips Tapping Screw - M4x8	
106	0951 3006B	Philips Screw With Flat Washer - M3x6	
107	0450 3008B	Tapping Screw - M3x8	

2.Exterior 2 (A229)



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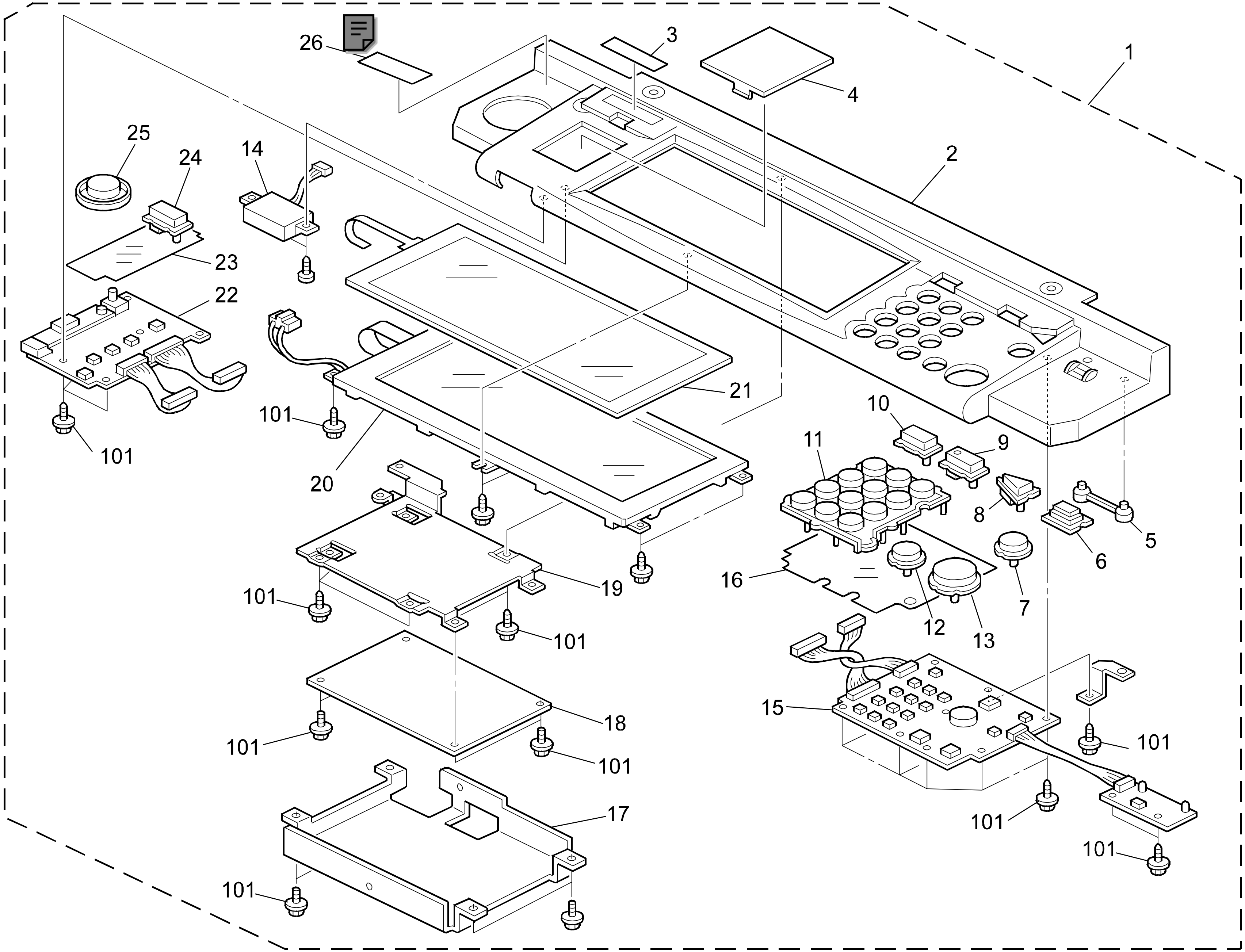
2.Exterior 2 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 1272	Left Upper Cover (230V)	1
1	A229 1271	Left Upper Cover (120V)	1
2	A229 1333	Connector Cap	1
3	A229 1361	Decal - Main Switch (230V)	1
3	A229 1360	Decal - Main Switch (120V)	1
4	A247 1299	Cap - 22	2
5	A229 1273	Rear Upper Cover	1
6	A229 1310	Upper Cover	1
7	AA14 3416	Stepped Screw - M4x3	2
8	A247 1318	Cap - 17	6
9	A229 1270	Lower Cover	2
10	AA15 2315	Tank Seal	1
11	AA03 2041	Tonner Collection Bot[illegible]	1
12	A007 3751	Cap Large - Toner Collection Tank	1
13	AA00 0059	Caution Decal - Engli[illegible]	1
14	A096 3711	Collection Tank Holde[illegible]	1
15	A096 3712	Ratch	1
16	A229 1304	Large Capacity Tray Cover	1
17	A229 1332	Coupling Cap	1
18	A229 1260	Upper Right Cover	1
19	**A229 1262**	**Optics Dust Filter**	**1**
20	A229 1309	Rear Lower Cover	1
21	A229 1359	Shading Plate	1
22	A229 1327	Operation Panel Upper Cover	1
23	A229 1331	Key Counter Cap	1
24	A229 8521	Operating Instructions Holder - A5	1
25	A229 1311	Upper Right Cover	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 4008H	Tapping Screw - 4x8	
102	0450 3008B	Tapping Screw - M3x8	

3.Operation Panel (A229)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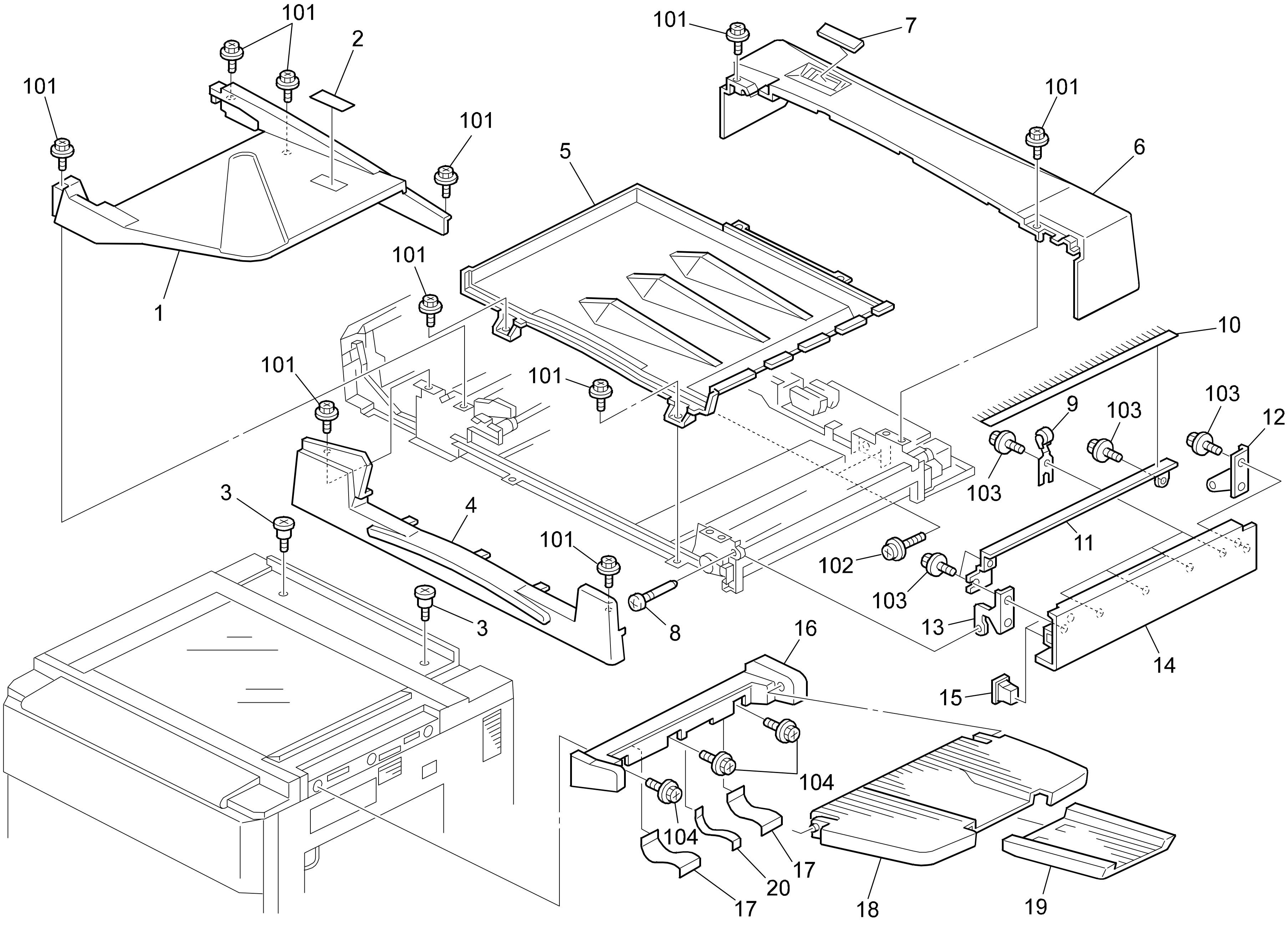
3.Operation Panel (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 1412	Operation Panel Ass'y (LT)	1
1	A229 1414	Operation Panel Ass'y (A4)	1
2	A229 1442	Operation Panel Case (A4)	1
2	A229 1441	Operation Panel Case (LT)	1
3	A229 1466	Guidance Sheet	1
4	A229 1461	Application Cap	1
5	A229 1465	LED Guide	1
6	A229 1459	Keytop - Power Source	1
7	A229 1457	Keytop - Check	1
8	A229 1456	Keytop - Interrupt	1
9	A229 1475	Key-top - Standby	1
10	A229 1455	Keytop - Program	1
11	A229 1451	Keytop - 10key	1
12	A229 1453	Keytop - Clear/Stop	1
13	A229 1452	Keytop - Start	1
14	AW01 0079	Optics Sensor	1
15	A229 1462	10key Board	1
16	A229 1468	10key Sheet	1
17	A229 1433	LCDC Cover	1
18	A229 5200	LCDC Board	1
19	A229 1432	LCDC Bracket	1
20	A229 5215	HVGA LCD	1
21	A229 1425	Touch Panel Ass'y	1
22	A229 1463	Application Board	1
23	A229 1467	Application Sheet	1
24	A229 1458	Keytop - Tool	1
25	A229 1460	Dial - Contrast	1
26	A153 6409	Decal - Keytop Cover (GES/NRG)	1
26	C225 2866	Decal - Keytop Cover (REX)	1
26	C225 2867	Decal - Keytop Cover (NASHUA)	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 3006B	Tapping Screw - M3x6	

4.DF Exterior (A229)



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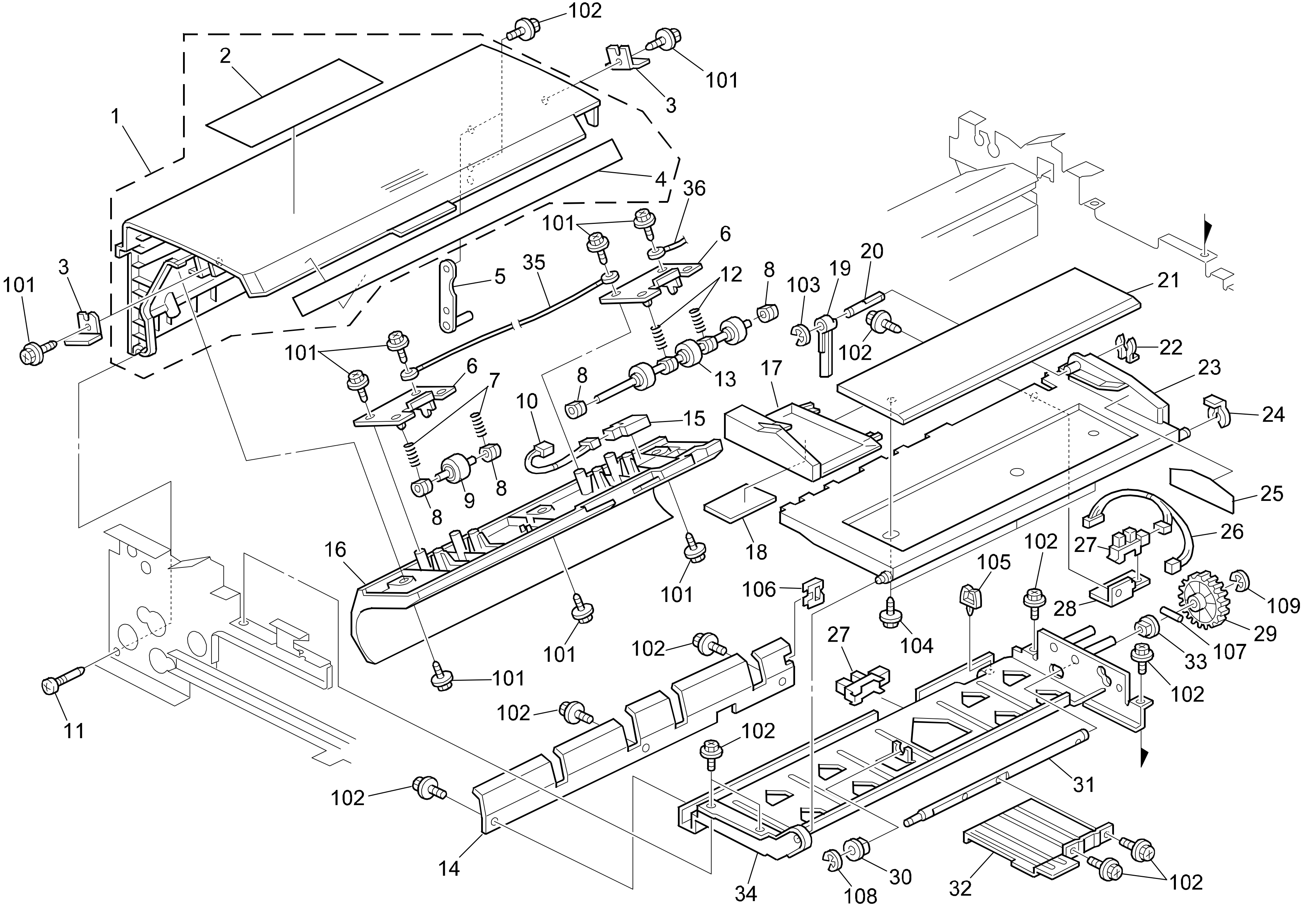
4.DF Exterior (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A806 1821	Original Table	1
2	A610 6051	Decal - Document Set	1
3	A376 4911	Stepped Screw - Left Hinge	2
4	A806 1711	Front Cover	1
5	A806 1791	Original Table Cover	1
6	A806 1731	Rear Cover	1
7	A806 4341	Display Panel	1
8	5446 2824	Screw - Duplex Guide Plate	1
9	A548 1241	Driven Roller Ass'y	4
10	AA12 0032	Antistatic Brush	1
11	A806 3266	Discharge Brush Bracket	1
12	A806 3261	Inner Back Cover Bracket	1
13	A806 3251	Exit Cover Bracket	1
14	A806 1781	Exit Cover	1
15	G012 1531	Magnet	2
16	A229 1393	Exit Tray Holder	1
17	A229 1395	Mylar - Large	2
18	A229 1394	Exit Tray	1
19	A666 2421	Sub - Shift Tray	1
20	A229 1396	Mylar - Small	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 3008B	Tapping Screw - M3x8	
102	0951 5010B	Philips Screw With Washer - M5x10	
103	0450 4012B	Tapping Screw - M4x12	
104	0451 4008H	Tapping Screw - 4x8	

5.Original Feed 1 (A229)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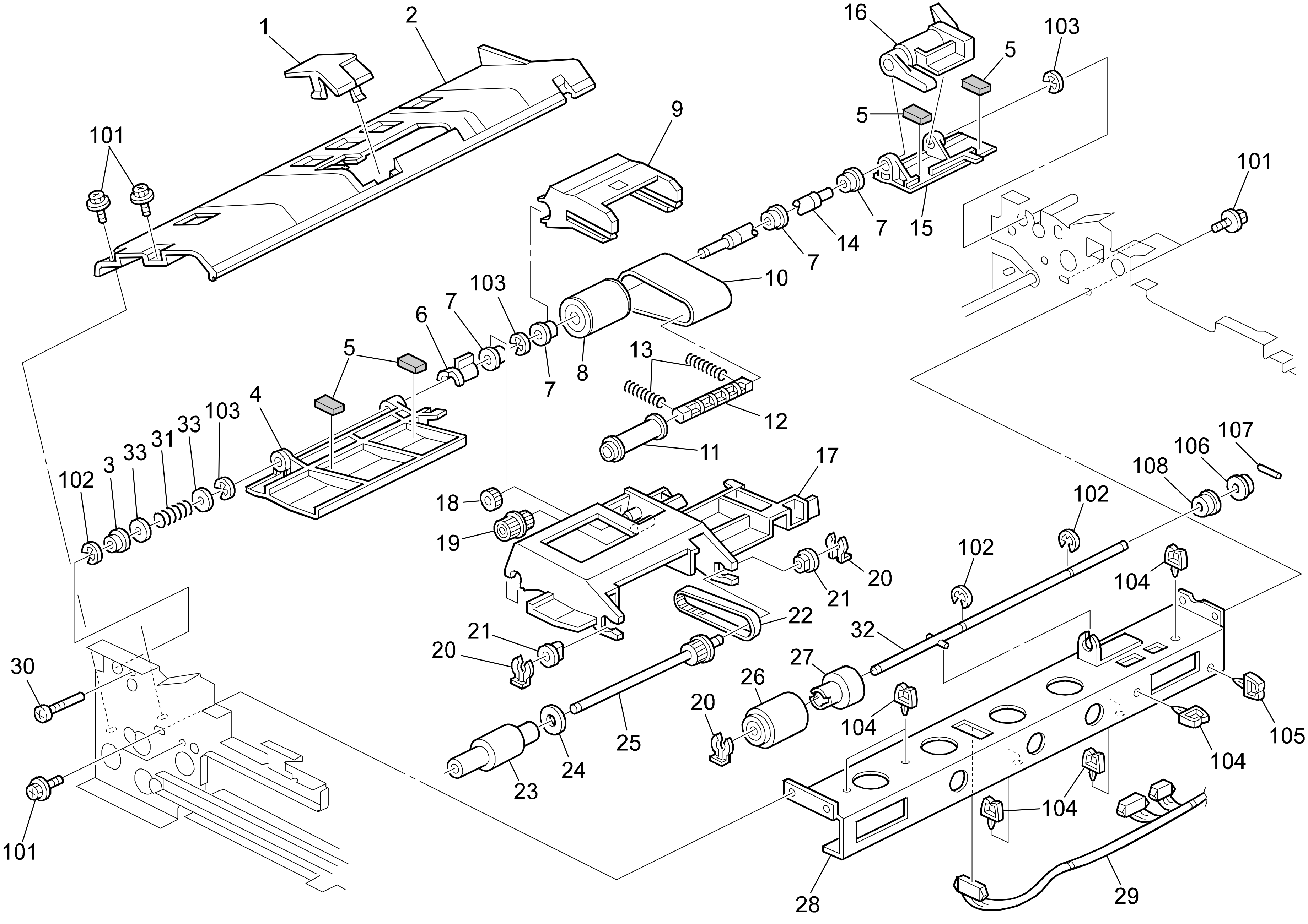
5.Original Feed 1 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A806 1751	Feed Cover	1
2	A806 4311	Decal - Misfeed Removal	1
3	A806 1371	Magnet Catch - Paper Feed Cover	2
4	A806 4331	Decal - Original Size	1
5	A806 1361	Cover Bracket	1
6	A806 1181	Pressure Roller Bracket - Pull Out	2
7	A806 4222	Compression Spring	2
8	A680 1661	Bushing - 4mm	4
9	A806 1196	Driven Roller	1
10	A806 5710	Pull Out Sensor Harness	1
11	5446 2824	Screw - Duplex Guide Plate	1
12	A806 4211	Compression Spring	2
13	A806 1191	Pull Out Driven Roller	1
14	A806 1335	Original Table Guide Plate	1
15	AW01 0076	Photosensor - PS-117D1	1
16	A806 1171	Turn Guide Plate	1
17	A806 1881	Side Fence	1
18	A376 4599	Side Fence Pad	1
19	A806 1351	Original Sensor Feeler	1
20	A806 1353	Feeler Stud	1
21	A680 4151	Side Fence Guide	1
22	5206 2686	Snap Ring	1
23	A806 1861	Original Table Base	1
24	5215 2621	Snap Ring - M6	1
25	A806 4321	Decal - Original Stack Hight	1
26	A806 5730	Original Sensor Harness	1
27	AW02 0075	Photointerrupter	2
28	A806 1356	Original Sensor Bracket	1
29	A806 2281	Gear - Z47	1
30	5053 0447	Bushing - 6mm	1
31	A806 1346	Base Shaft	1
32	A806 1342	Base Lever	1
33	5053 0223	Bushing - 8mm	1
34	A806 1331	Original Table Stay	1
35	A806 5785	Grounding Harness	1

Index No.	Part No.	Description	Q'ty Per Assembly
36	A806 5780	Grounding Harness	1
101	0450 4008B	Tapping Screw - 4x8	
102	0451 3008B	Tapping Screw - M3x8	
103	0720 0030B	Retaining Ring - M3	
104	0450 3008B	Tapping Screw - M3x8	
105	1105 0199	Clamp	
106	1105 0328	Harness Clamp - ES-0505	
107	0632 0140G	Parallel Pin	
108	0720 0040B	Retaining Ring - M4	
109	0720 0060B	Retaining Ring - M6	

6.Original Feed 2 (A229)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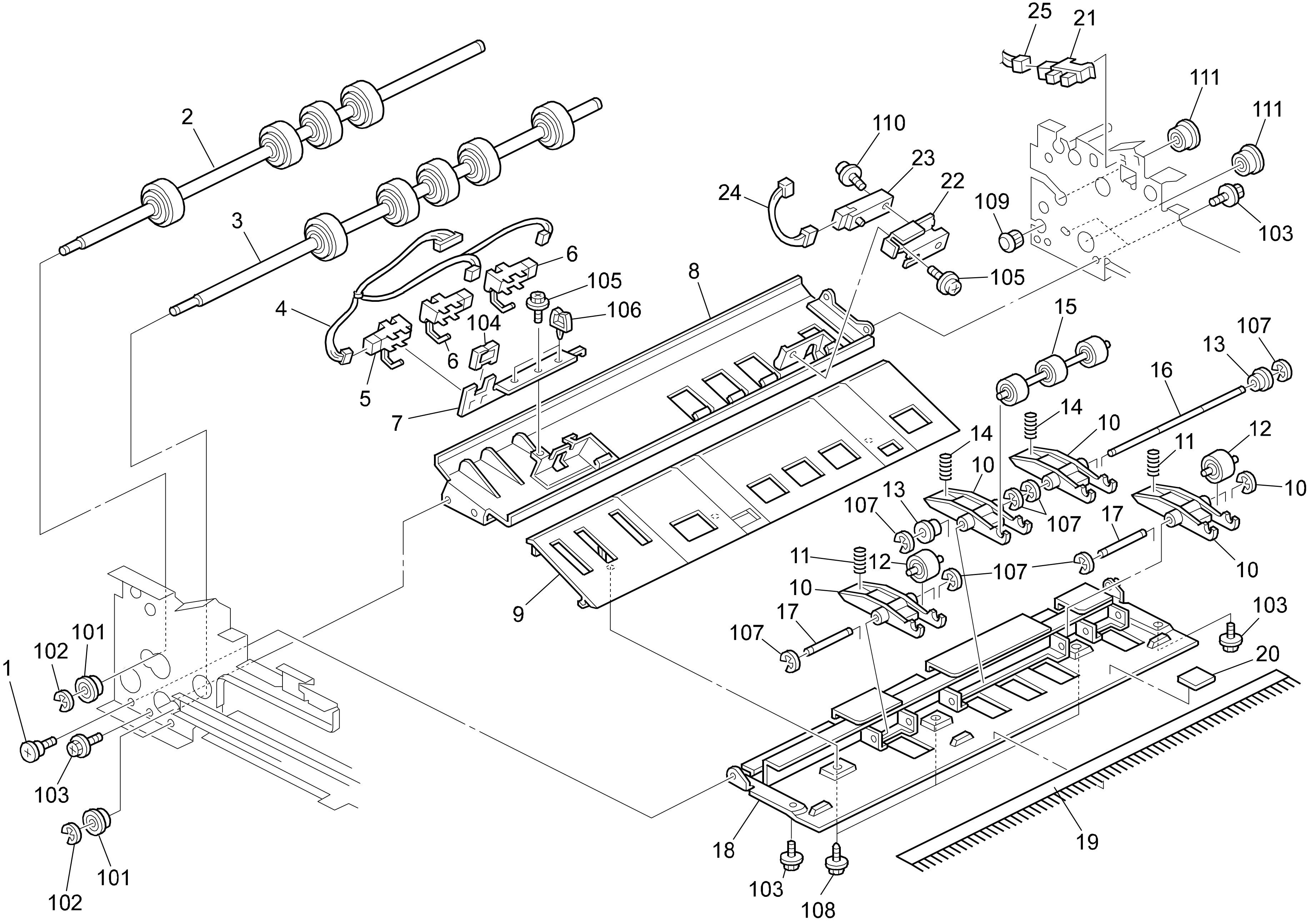
6.Original Feed 2 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A806 1152	Upper Guide Plate	1
2	A806 1151	Upper Guide Plate	1
3	A806 1286	Bushing	1
4	A806 1161	Entrance Guide Plate - Front	1
5	A806 1163	Guide Plate Cushion	4
6	A680 1621	Feed-in Unit Stopper	1
7	A628 1225	Bushing - 8mm	4
8	A806 1296	Transport Belt Roller	1
9	A806 1291	Transport Belt Brac[illegible]	1
10	**A680 1241**	**Feed Belt**	**1**
11	A806 1297	Transport Belt Roll[illegible]	1
12	A806 1298	Transport Belt Roll[illegible]haft	1
13	AA06 3318	Spring - Belt Guide [illegible]ller	2
14	A806 1282	Separation Drive S[illegible]t	1
15	A806 1162	Entrance Guide Plate - Inner	1
16	A806 1327	Release Lever	1
17	A806 1312	Pickup Roller Bracket	1
18	A806 2271	Gear - Z18	1
19	A806 2151	Timing Pulley - T19/Z23 S2M/M0.6	1
20	5447 2681	Snap Ring	3
21	5053 0447	Bushing - 6mm	2
22	A806 4118	Timing Belt - B40S2M148	1
23	**A806 1321**	**Pickup Roller**	**1**
24	AA13 2171	Spacer - 6x20x1	1
25	A806 2153	Timing Pulley - T27 S2M	1
26	**A680 1671**	**Separation Roller**	**1**
27	A247 2900	Torque Limiter - 53mnxm	1
28	A806 1141	Reverse Roller Stay	1
29	A806 5725	Sensor Harness	1
30	5415 4145	Stud	1
31	AA06 3315	Spring - Belt Drive Shaft	1
32	A806 2512	Reverse Roller Shaft	1
33	A418 1158	Spacer - M6.5x1	2

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 3008B	Tapping Screw - M3x8	
102	0720 0040B	Retaining Ring - M4	
103	0720 0060B	Retaining Ring - M6	
104	1105 0199	Clamp	
105	1105 0231	Clamp	
106	0741 3506	Ball Bearing - 6x12x4 mm	
107	0622 0120E	Spring Pin - 2x12mm	
108	0741 3706	Ball Bearing - 6x10x3	

7.Original Feed 3 (A229)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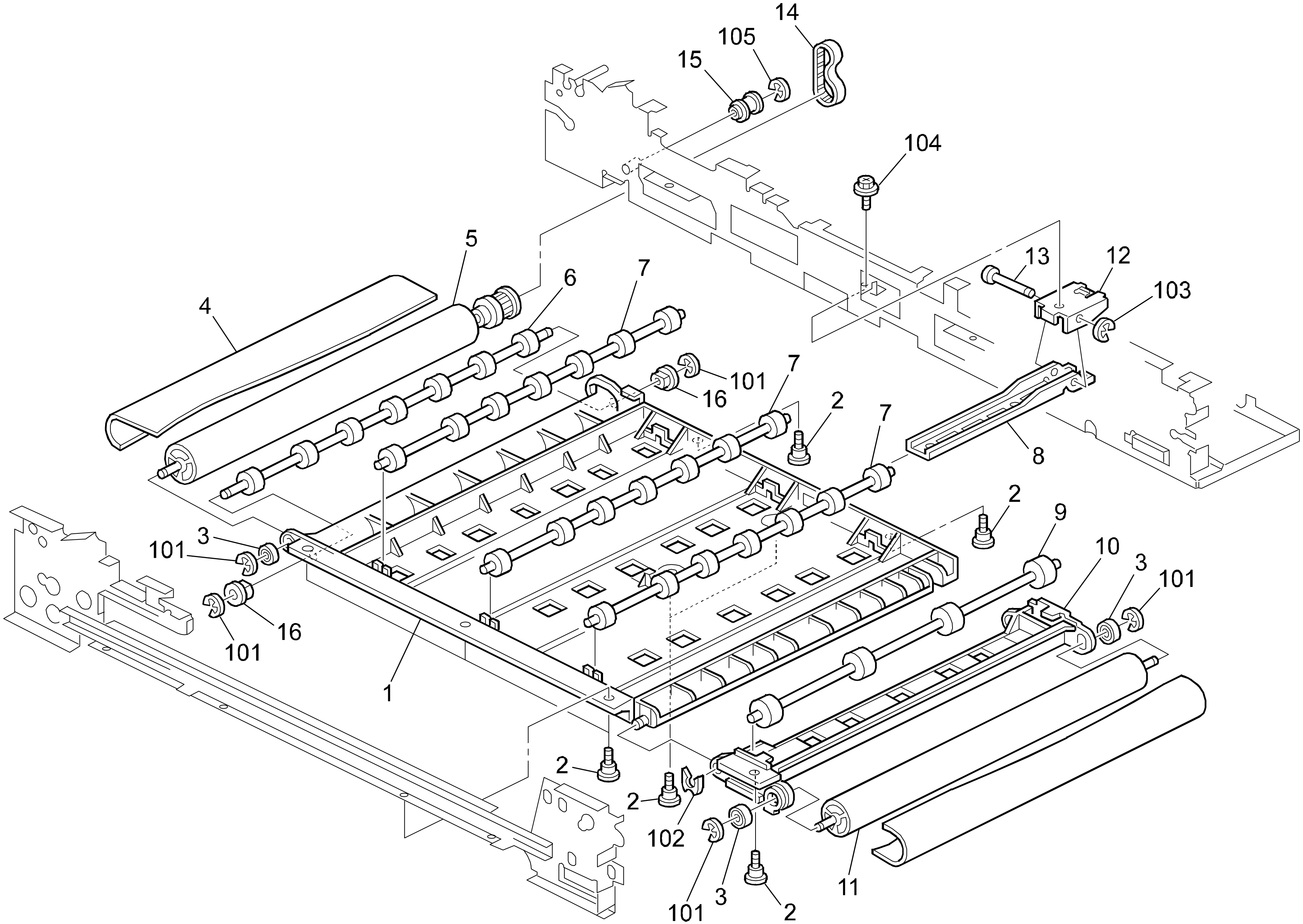
7.Original Feed 3 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	AA14 3074	Stepped Screw - M4x5	1
2	A806 1271	Pull Out Drive Roller	1
3	A806 1276	Transport Drive Roller	1
4	A806 5745	Paper Siz Sensor Harness	1
5	AW02 0104	Photointerruptor	1
6	AW02 0095	Photointerruptor	2
7	A806 1226	Paper Size Sensor Bracket	1
8	A806 1211	Middle Guide Plate	1
9	A806 1241	Lower Guide Plate	1
10	A806 1251	Transport Roller Arm	4
11	A806 4222	Compression Spring	2
12	A806 1266	Driven Roller	2
13	5324 1658	Bushing- 4x8x4.5mm	2
14	A806 4221	Compression Spring	2
15	A806 1261	Middle Driven Roller	1
16	A806 1256	Middle Shaft - Roller Arm	1
17	A806 1257	Roller Arm Shaft	2
18	A806 1231	Paper Feed Base	1
19	A376 3242	Antistatic Brush	1
20	A422 1063	Seal - 0.7x13x20	1
21	AW02 0075	Photointerrupter	1
22	A806 1221	Registration Sensor Bracket	1
23	AW01 0076	Photosensor - PS-117D1	1
24	A806 5740	Registration Sensor Harness	1
25	A806 5735	Pick Up Sensor Harness	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0741 3506	Ball Bearing - 6x12x4 mm	
102	0720 0040B	Retaining Ring - M4	
103	0451 3008B	Tapping Screw - M3x8	
104	1105 0328	Harness Clamp - ES-0505	
105	0451 3006B	Tapping Screw - M3x6	
106	1105 0199	Clamp	
107	0720 0030B	Retaining Ring - M3	
108	0450 3008B	Tapping Screw - M3x8	
109	1106 0193	Bushing - 7.9mm	
110	0451 3012B	Tapping Screw With Washer - M3x12	
111	0741 3808	Ball Bearing - 8x16x5mm	

8.Original Transport (A229)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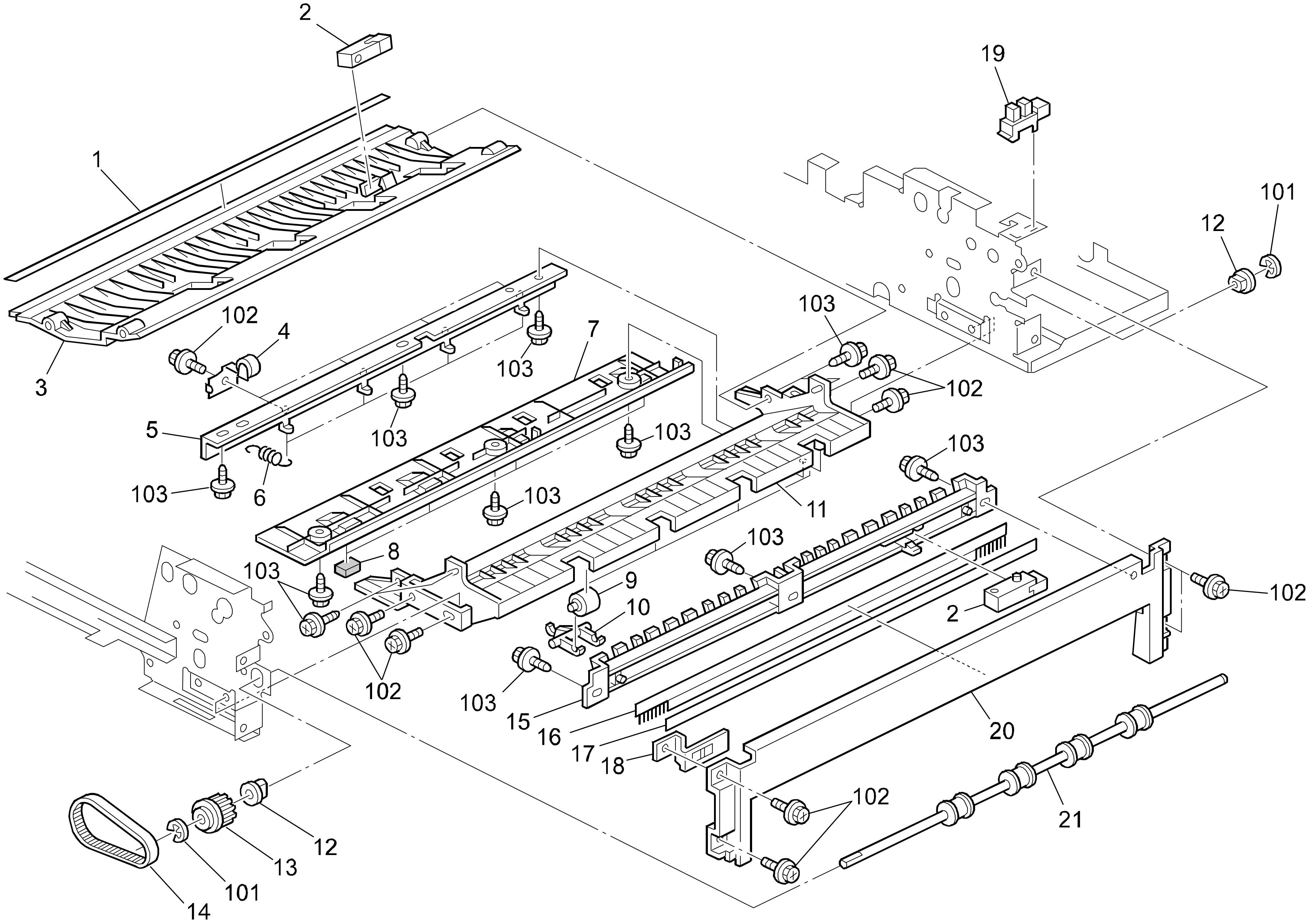
8.Original Transport (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A663 1412	Transport Base Plate	1
2	5419 5714	Stepped Screw - M4	8
3	A232 3563	Ball Bearing - 6x12x4	3
4	**A680 1481**	**Transport Belt**	**1**
5	A680 1431	Belt Drive Roller	1
6	A680 1451	Belt Pressure Roller	1
7	A548 1461	Belt Pressure Roller	3
8	A548 1442	Transport Arm	1
9	A610 2161	Belt Pressure Roller - 24	1
10	A663 1422	Transport Stay	1
11	A376 2132	Belt Driven Roller	1
12	A680 1446	Transport Unit Arm	1
13	A680 1443	Arm Shaft	1
14	A806 4114	Timing Belt - B40S3M174	1
15	A548 2139	Pulley	1
16	5053 0447	Bushing - 6mm	2

Index No.	Part No.	Description	Q'ty Per Assembly
101	0720 0040E	Retaining Ring - M4	
102	0805 0089	Retaining Ring - M4	
103	0720 0030E	Retaining Ring - M3	
104	0451 3006B	Tapping Screw - M3x6	
105	0720 0040B	Retaining Ring - M4	

9.Original Exit 1 (A229)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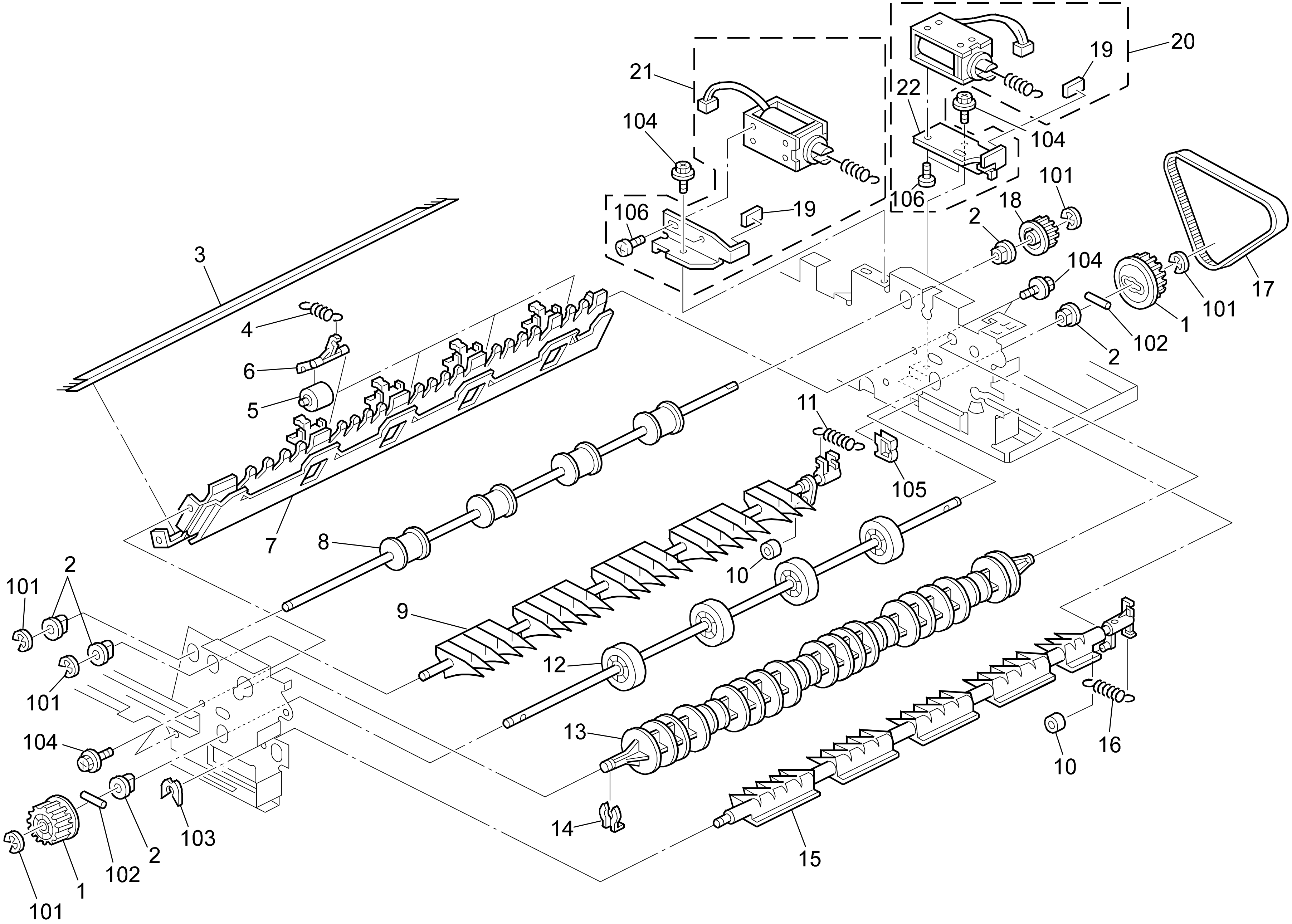
9.Original Exit 1 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A806 3162	Reverse Exit Guide	1
2	AW01 0076	Photosensor - PS-117D1	2
3	A806 3161	Left Guide Plate	1
4	A806 3151	Driven Exit Roller	4
5	A806 3142	Guide Plate Bracket	1
6	A806 4233	Tension Spring	4
7	A806 3171	Lower Exit Cover	1
8	A806 3291	Original Stopper Cushion	4
9	A548 1233	Driven Roller	4
10	A548 1234	Driven Roller Arm	4
11	A806 3131	Lower Exit Guide Plate	1
12	5053 0447	Bushing - 6mm	2
13	A806 3281	Timing Pulley - T14 S3M	1
14	A806 4122	Timing Belt - B40S3M150	1
15	A806 3211	Right Exit Guide Plate	1
16	AA12 0032	Antistatic Brush	1
17	A806 3222	Seal	1
18	A806 3221	Exit Ground Plate	1
19	AW02 0075	Photointerrupter	1
20	A806 1921	Right Cover	1
21	A806 3111	Drive Exit Roller	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0720 0040B	Retaining Ring - M4	
102	0451 3008B	Tapping Screw - M3x8	
103	0450 3008B	Tapping Screw - M3x8	

10.Original Exit 2 (A229)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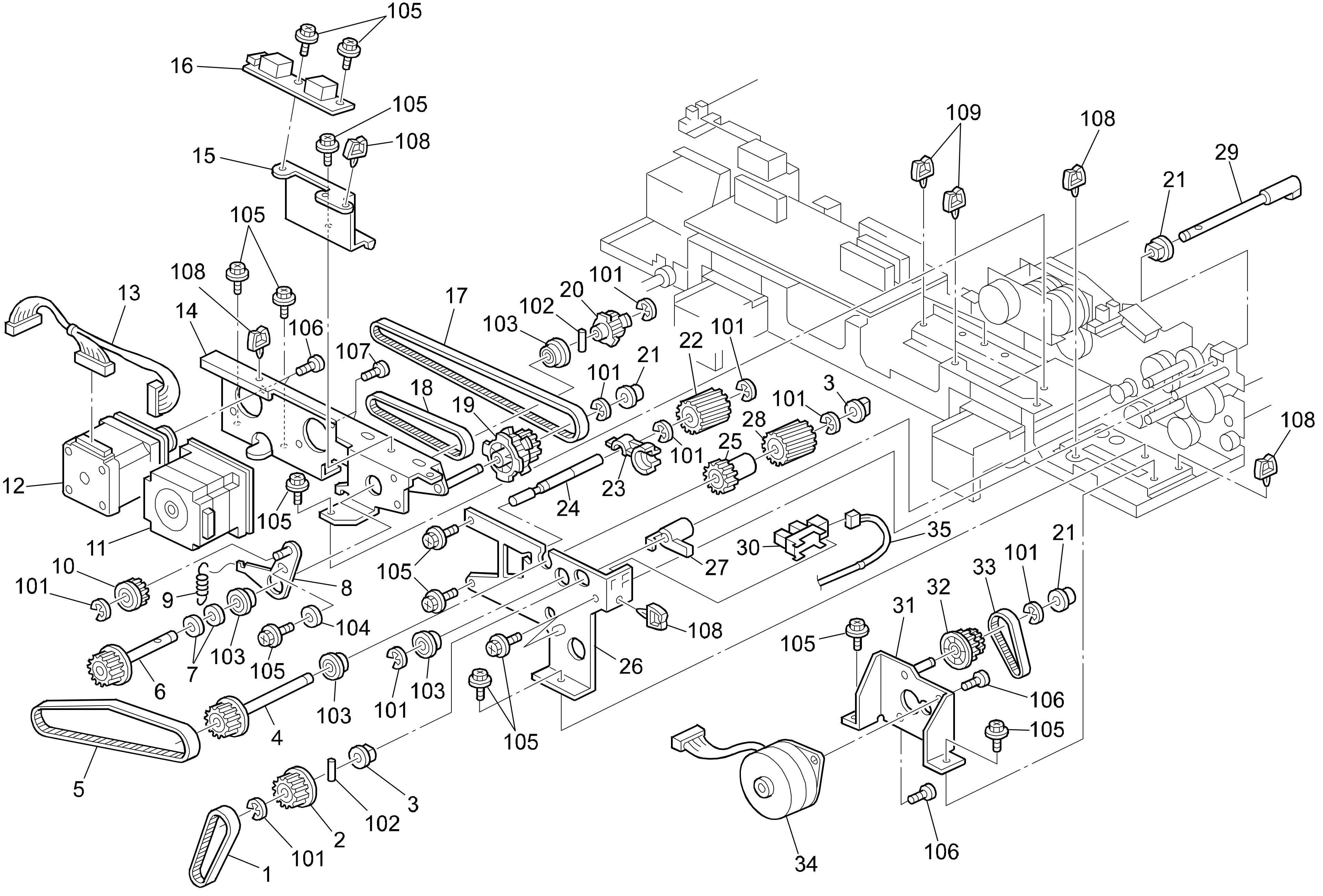
10.Original Exit 2 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A680 2321	Pulley - 30T	2
2	5053 0447	Bushing - 6mm	5
3	A548 1217	Antistatic Brush - Paper Exit	1
4	AA06 0588	Pressure Spring	4
5	A548 1233	Driven Roller	4
6	A548 1234	Driven Roller Arm	4
7	A806 3181	Reverse Guide Plate	1
8	A548 1261	Exit Roller	1
9	A548 1320	Inverter Gate Plate	1
10	A548 1317	Lever Cushion	2
11	A806 4232	Tension Spring	1
12	A806 3271	Reverse Drive Roller	1
13	A548 1231	Guide Roller	1
14	5215 2621	Snap Ring - M6	1
15	A806 3191	Exit Junction Gate	1
16	A806 4231	Tension Spring	1
17	A806 4121	Timing Belt - B40S3M213	1
18	A548 2137	Timing Pulley - 18Z	1
19	A469 3113	Rubber Seal - 1x6x10mm	2
20	A806 3311	Invertor Solenoid	1
21	A680 1384	Solenoid - Lower Inverter Gate	1
22	A806 3312	Solenoid Bracket	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0720 0040B	Retaining Ring - M4	
102	0632 0120G	Parallel Pin - 2x12	
103	0805 0089	Retaining Ring - M4	
104	0451 3008B	Tapping Screw - M3x8	
105	1105 0328	Harness Clamp - ES-0505	
106	0353 0030B	Philips Truss Head Screw - M3x3	

11.DF Drive Section 1 (A229)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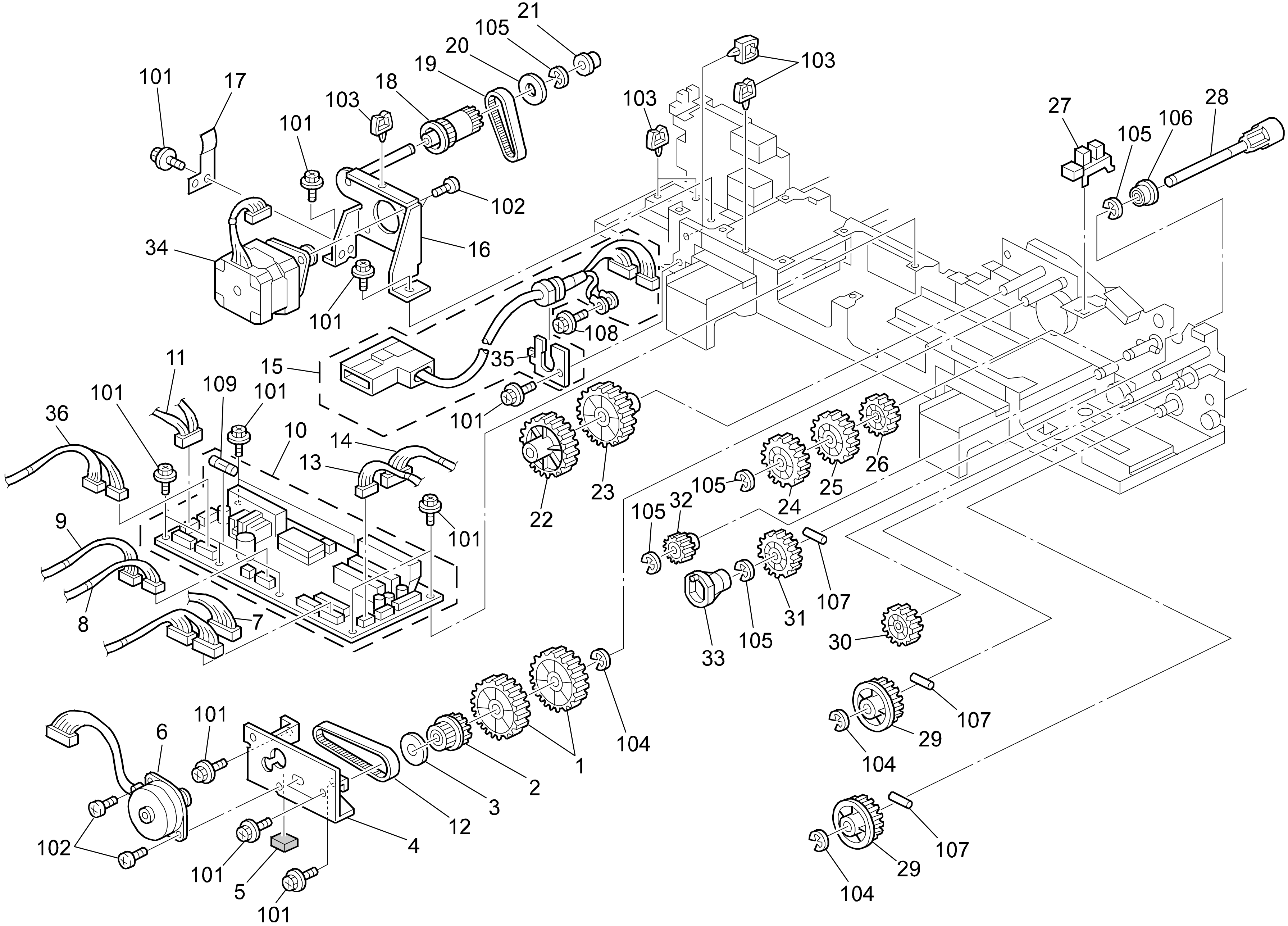
11.DF Drive Section 1 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A806 4116	Timing Belt - B40S3M177	1
2	A806 2141	Timing Pulley - T22 S3M	1
3	5053 0447	Bushing - 6mm	2
4	A806 2122	Timing Pulley - T24	1
5	A806 4113	Timing Belt - B40S3M276	1
6	A806 2113	Timing Pulley - T23 S3M	1
7	5937 4158	Spring Washer - BD10	2
8	A806 2322	Paper Feed Stay	1
9	A806 4234	Tension Spring	1
10	AB03 0354	Pulley - 20T	1
11	A806 2921	Stepper Motor Ass'y - DC30.4W	1
12	A680 2611	Stepping Motor - DC 6.7W	1
13	A806 5720	Paper Feed Motor Harness	1
14	A806 2311	Motor Bracket	1
15	A806 2711	Display Bracket	1
16	5936 5231	Indicator Board	1
17	A806 4112	Timing Belt - B40S2M408	1
18	A806 4111	Timing Belt - B60S2M200	1
19	A680 2231	Pulley - 44T/20T	1
20	A806 2111	Timing Pulley - T28 S2M	1
21	5936 2321	Rubber Bushing - Vibration Damper	3
22	A806 2232	Gear - 18Z	1
23	A806 2611	Gear Stopper	1
24	A806 2233	Gear Shaft - 18Z	1
25	A806 2213	Gear - 22Z	1
26	A806 2331	Paper Feed Bracket	1
27	A680 2262	Feeler - Pick-up Roller Cam	1
28	A806 2211	Gear - 22Z	1
29	A806 2422	Pick-up Roller Cam	1
30	AW02 0075	Photointerrupter	1
31	A806 2351	Pickup Roller Motor Bracket	1
32	A806 2131	Timing Pulley - T37/T18 S2M/S3M	1
33	A806 4115	Timing Belt - B40S2M116	1
34	AX04 0096	Stepping Motor - DC 18W	1
35	A806 5750	Sensor Harness	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0720 0040B	Retaining Ring - M4	
102	0632 0120G	Parallel Pin - 2x12	
103	0741 3506	Ball Bearing - 6x12x4 mm	
104	0701 0030B	Flat Washer - M3	
105	0451 3008B	Tapping Screw - M3x8	
106	0353 0050B	Philips Truss Head Screw - M3x5	
107	0354 0060B	Screw - M4X6	
108	1105 0199	Clamp	
109	1105 0231	Clamp	

12.DF Drive Section 2 (A229)



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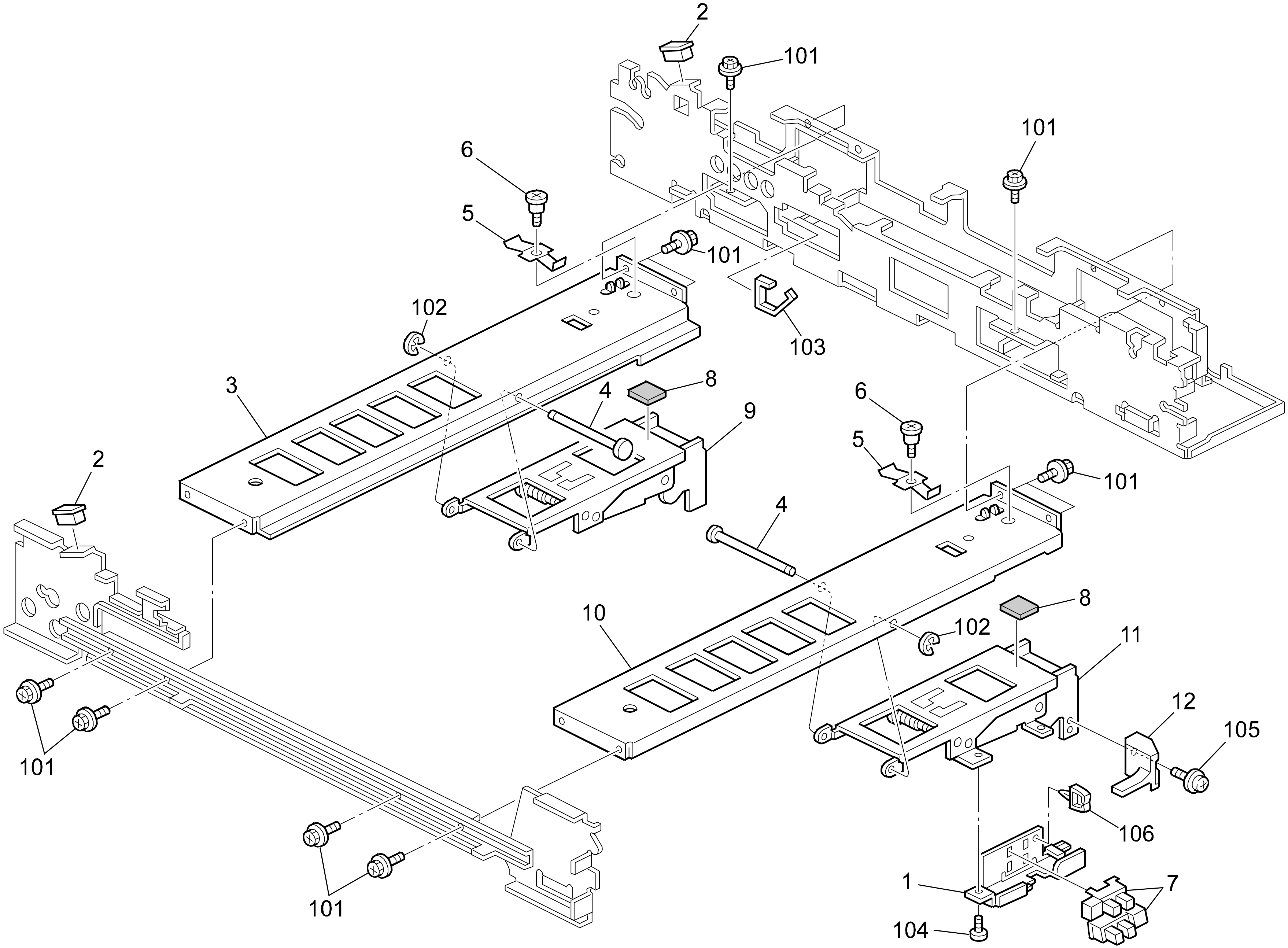
12.DF Drive Section 2 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A806 2283	Gear - Z20/Z47	2
2	A806 2161	Timing Pulley - T30/Z20 S2M/M0.8	1
3	AA13 2152	Spacer - 8x20x1	1
4	A806 2362	Base Bracket	1
5	A806 3291	Original Stopper Cushion	1
6	A806 2911	Stepper Motor Ass'y	1
7	A806 5750	Sensor Harness	1
8	A806 5755	On Off Detector Harness	1
9	A806 5765	Exit Sensor Harness	1
10	A806 5510	ADF Main Control Board	1
11	A806 5760	Reverse Sensor Harness	1
12	A806 4117	Timing Belt - B40S2M158	1
13	A806 5705	Display Harness	1
14	A806 5715	Pick Up Motor Harness	1
15	A806 5770	DF Harness	1
16	A806 3241	Exit Motor Bracket	1
17	A806 4252	Grounding Plate	1
18	A680 2311	Pulley - 18T/32T	1
19	AA04 3380	Timing Belt - B40S2M116	1
20	A300 3812	Spacer - 6x22x1.5	1
21	5936 2321	Rubber Bushing - Vibration Damper	1
22	A806 2287	Gear - Z20/Z47	1
23	A806 2285	Gear - Z20/Z47	1
24	A806 2225	Gear - 36Z	1
25	A806 2223	Gear - 36Z	1
26	A806 2221	Gear - 27Z	1
27	AW02 0075	Photointerrupter	1
28	A806 2243	Separation Drive Shaft	1
29	A806 2261	Gear - Z30	2
30	A806 2253	Gear - Z31	1
31	A806 2242	Gear - 27Z	1
32	A806 2251	Gear - Z19	1
33	A806 2244	Separation Shaft Stopper	1
34	A663 2621	Exit Motor - 3.7V 14.8W	1
35	A680 1171	Harness Holder	1

Index No.	Part No.	Description	Q'ty Per Assembly
36	A806 5773	Sadf Harness	1
101	0451 3008B	Tapping Screw - M3x8	
102	0353 0050B	Philips Truss Head Screw - M3x5	
103	1105 0199	Clamp	
104	0720 0060B	Retaining Ring - M6	
105	0720 0040B	Retaining Ring - M4	
106	0741 3506	Ball Bearing - 6x12x4 mm	
107	0632 0160G	Parallel Pin-m2x16	
108	0451 4008B	Philips Tapping Screw - M4x8	
109	1107 0750	Fuse - 3.15A 250V	

13.DF Frame Section (A229)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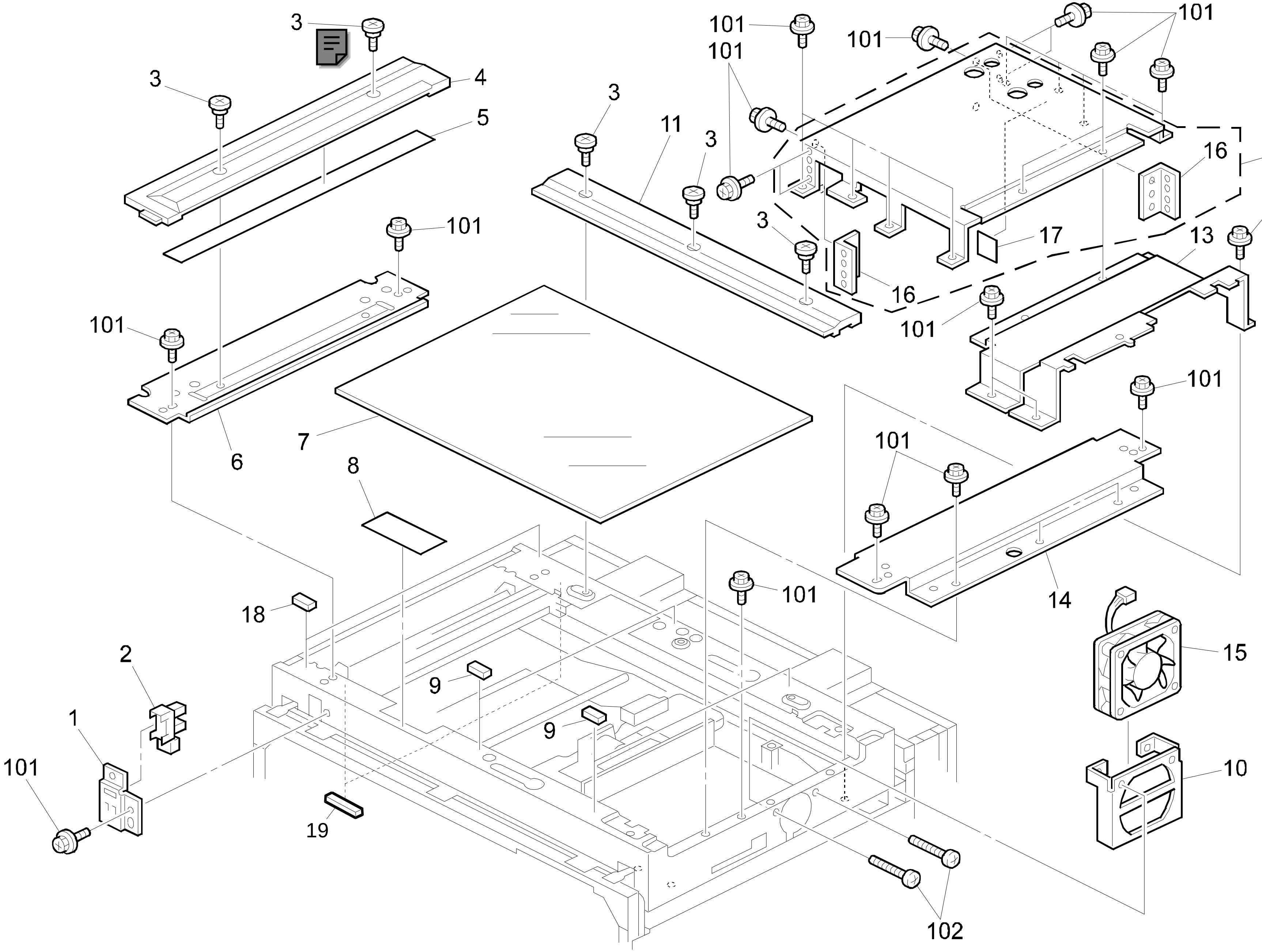
13.DF Frame Section (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A548 1541	Safety Switch Bracket	1
2	A680 1181	Magnetic Catch	2
3	A806 1131	Left Frame Stay	1
4	A806 1135	Contact Point Shaft	2
5	A548 1135	Spring Plate	2
6	AA14 3039	Spring Holder	2
7	AW02 0075	Photointerrupter	2
8	A351 4281	Anti-vibration Cushion	2
9	A806 1511	Left Hinge	1
10	A806 1133	Right Frame Stay	1
11	A806 1521	Right Hinge	1
12	A548 1531	Safety Switch Feeler	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 3008B	Tapping Screw - M3x8	
102	0720 0030B	Retaining Ring - M3	
103	1105 0334	Edge - 17	
104	0314 0060B	Philips Pan Head Screw - M4x6	
105	0951 4006B	Philips Screw With Washer - M4x6	
106	1105 0199	Clamp	

14.Optics Section 1 (A229)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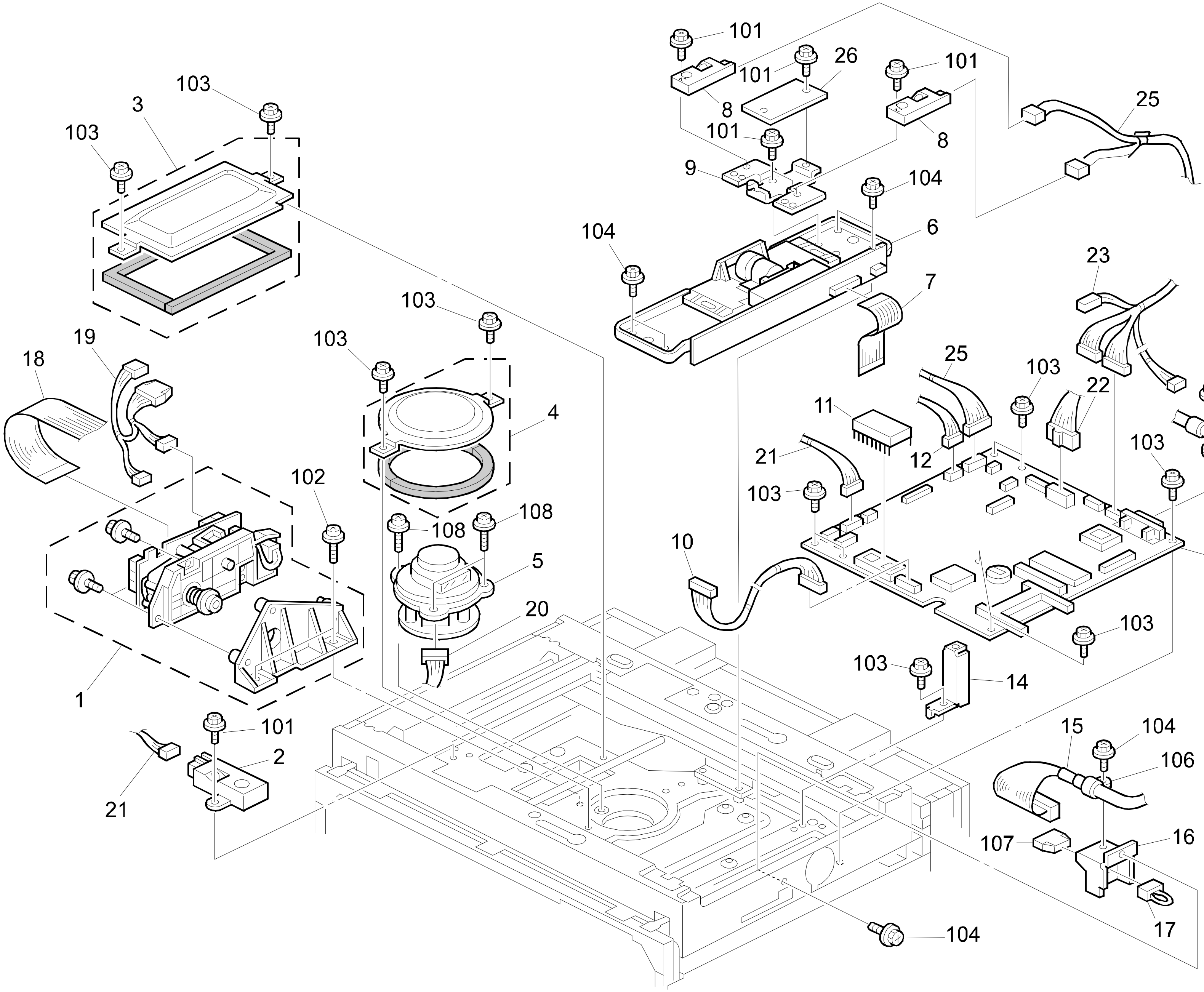
14.Optics Section 1 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 1825	Home Position Sensor Bracket	1
2	AW02 0056	Photointerruptor - EE-SX4235A-P1	1
3	5206 2684	Shoulder Screw - M3	5
4	A229 1778	Left Scale	1
5	A193 1752	Left Scale Guide	1
6	A229 1775	Scale Left Bracket	1
7	AC01 2065	Exposure Glass - A3 T-3.2	1
8	AA15 0636	Seal - 90x29.5x0.2	1
9	AA16 1138	Cushion - 1.1	4
10	A229 1831	Fan Bracket	1
11	A229 1781	Rear Scale	1
12	A229 1819	BICU Inner Cover	1
13	A229 1822	Right Inner Cover	1
14	A229 1785	Right Stay	1
15	AX64 0083	Cooling Fan	1
16	A229 1824	Inner Cover Angle	2
17	AA15 0332	Seal - 0.19x18x22	1
18	AA16 1137	Cushion - 0.5	2
19	AA16 1139	Cushion - Xenon Lamp	2
101	0451 3006B	Tapping Screw - M3x6	
102	0314 0300B	Philips Pan Head Screw - M4x30	

15.Optics Section 2 (A229)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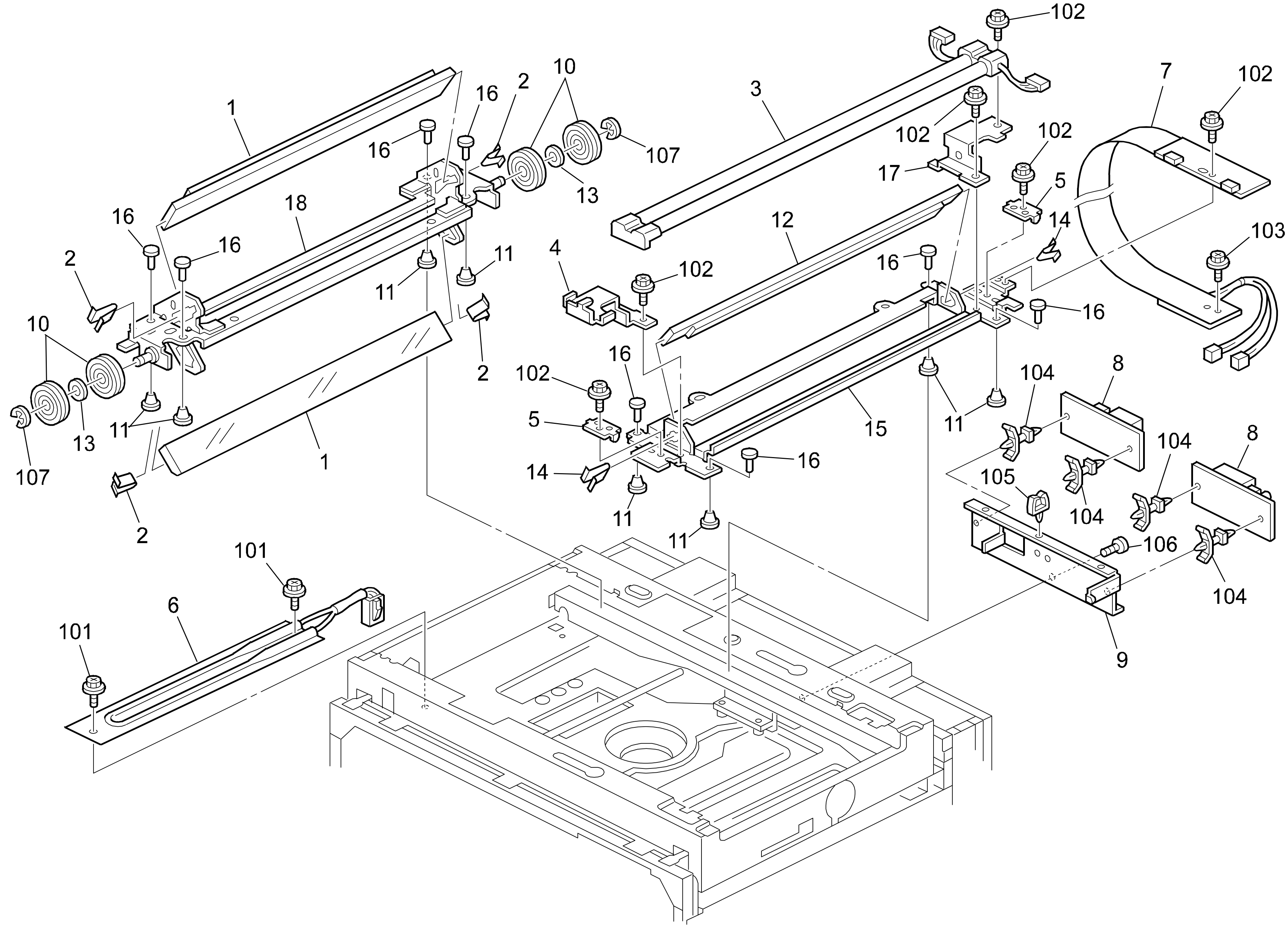
15.Optics Section 2 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 9061	LD Unit	1
2	AW01 0034	Original Width Sensor	1
3	A229 1695	Laser Diode Unit Cover	1
4	A229 1691	Polygon Mirror Motor Cover	1
5	AX06 0149	Polygon Mirror Motor Ass'y	1
6	A229 1796	Lens Unit	1
7	A229 5466	Scanner Harness	1
8	AW01 0078	Photosensor H=50	2
9	A229 1763	Original Sensor Bracket	1
10	A229 5405	LCDC Harness	1
11	A229 9099	NVRAM - Minus Counter	1
12	A229 7603	APS23 Scanner Harness	1
13	A229 7530	SBICU Board - 120V	1
13	A229 7550	SBICU Board - 230V	1
14	A229 1823	Inner Cover Bracket	1
15	A229 5472	MSU Harness	1
16	A229 1816	Key Counter Bracket	1
17	A096 5464	Key Counter Connector	1
18	A229 5426	Laser Diode Control Harness	1
19	A229 5430	Inner Harness	1
20	A229 5429	Power Harness	1
21	A229 5468	APS1 Hp Harness	1
22	A229 5507	Main Contro Harness	1
23	A229 5467	Motor Driver Harness	1
24	A229 5400	SBICU Harness	1
25	A229 5427	Stepper Motor Harness	1
26	A229 5150	12VA Board	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0353 0080B	Screw - M3X8	
102	0451 3012B	Tapping Screw With Washer - M3x12	
103	0353 0060B	Philips Pan Head Screw - M3x6	
104	0354 0060B	Screw - M4X6	
105	1105 0291	Metal Cable Clamp	
106	1105 0306	Metal Clamp - Al-4	
107	1102 6247	Connector - 4P	
108	0451 4010B	Tapping Screw - 4x10	

16.Optics Section 3 (A229)



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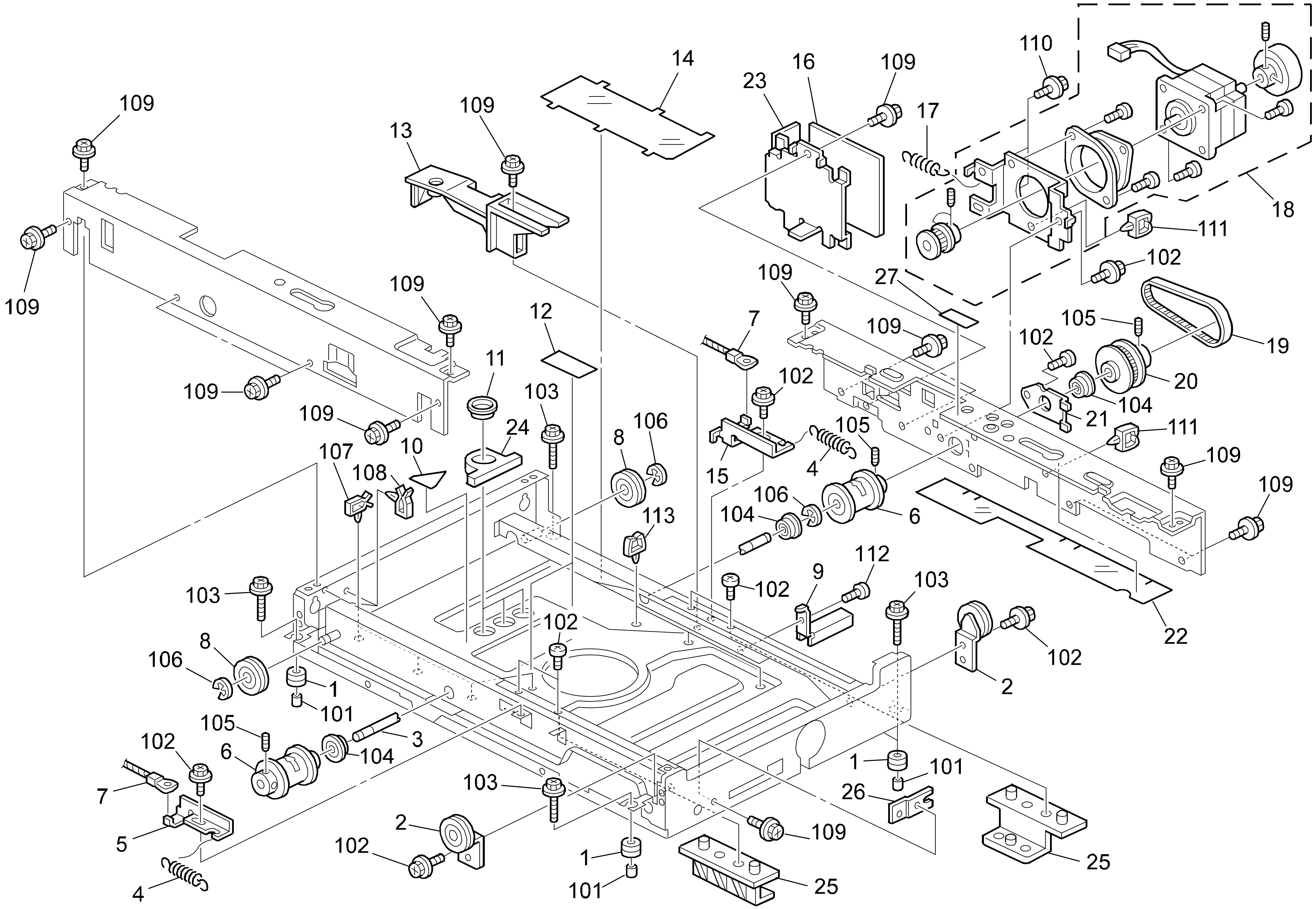
16.Optics Section 3 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	AC03 0074	2nd Mirror	2
2	A134 1791	Spring Plate - 2nd Mirror	4
3	AX50 0063	Xenon Lamp	1
4	A229 1736	Front Bracket	1
5	A134 1726	Wire Stopper Plate	2
6	AX40 0063	Anticondensation Heater - 120V 9W	1
6	AX40 0064	Anti Condensation Heater - 230V 9W	1
7	A229 5463	Xenon Lamp Flexible Board	1
8	AZ50 0052	Lamp Stabilizer	2
9	A229 1811	Invertor Bracket	1
10	AB03 2717	Pulley - 26Z	4
11	A069 1883	Shoe - Scanner	8
12	A229 1740	1st Mirror Ass'y	1
13	AA13 2174	Spacer - M8	2
14	A134 1776	Spring Plate - 1st Mirror	2
15	A229 1732	Carriage Frame	1
16	A096 1873	Scanner Shoe Pin	8
17	A229 1738	Rear Bracket	1
18	A134 1782	2nd Scanner Ass'y	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0353 0080B	Screw - M3X8	
102	0951 3006B	Philips Screw With Flat Washer - M3x6	
103	0450 3006B	Tapping Screw - M3x6	
104	1105 0194	PCB Stud	
105	1105 0229	Clamp	
106	0353 0060B	Philips Pan Head Screw - M3x6	
107	0720 0060E	Retaining Ring - M6	

17.Optics Section 4 (A229)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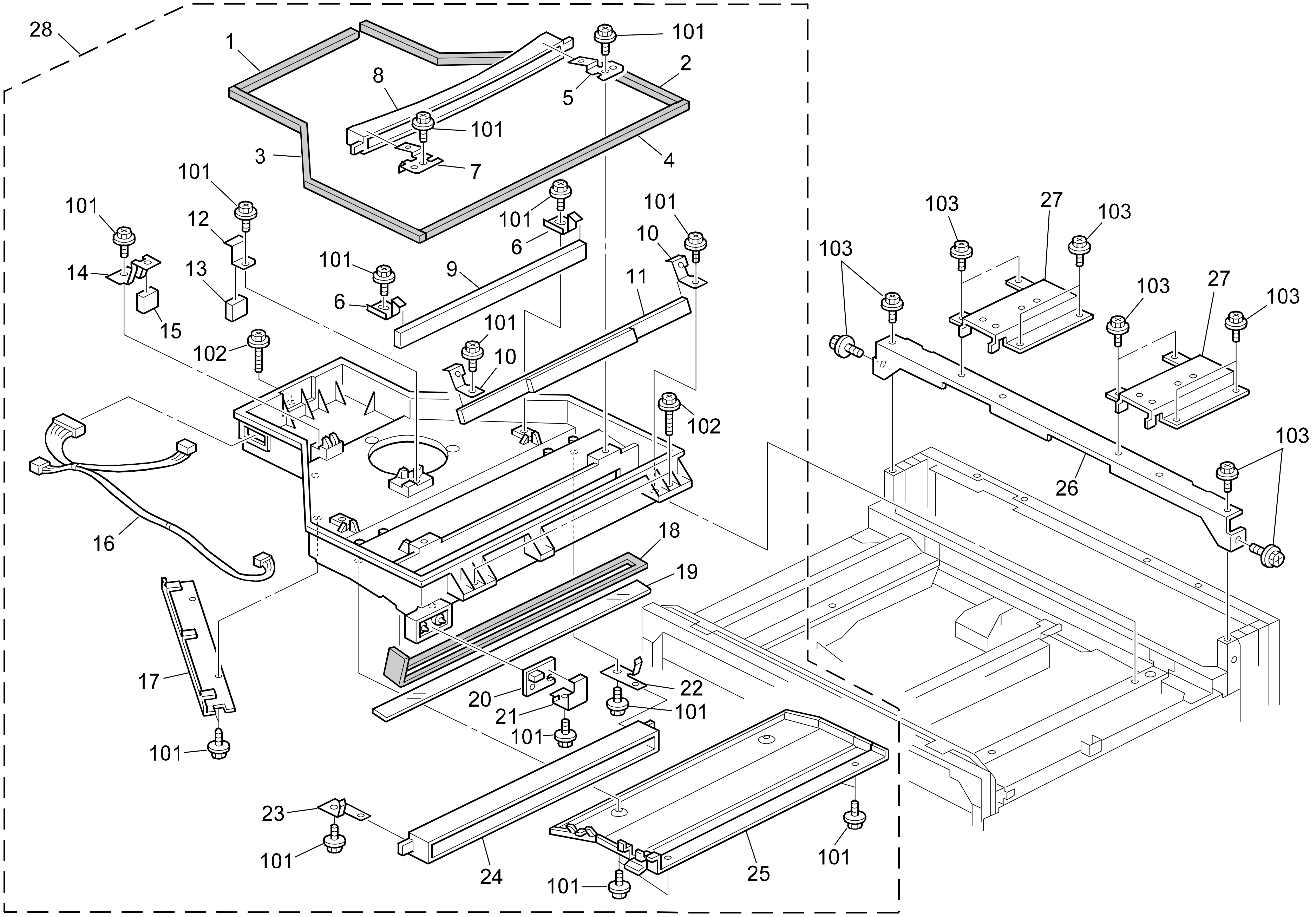
17.Optics Section 4 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	AA16 1104	Cushion - Motor	4
2	A134 1698	Idle Pulley	2
3	A229 1715	Drive Shaft	1
4	AA06 0221	Gripper Solenoid Spring	2
5	A229 1720	Front Tension Bracket	1
6	AB03 2718	Drive Pulley	2
7	A229 1719	Carrige Drive Wire	2
8	AB03 2717	Pulley - 26Z	2
9	A229 1823	Inner Cover Bracket	1
10	G020 1917	Decal - LD	1
11	5353 3283	Insert Cap	1
12	G020 1920	Decal - Laser Diode (115V)	1
12	G020 1918	Decal - Laser Diode (230V)	1
13	A229 1808	Flexible Board Guide	1
14	A229 1806	Lower Insulating Sheet	1
15	A229 1721	Tension Wire Bracket	1
16	A229 5331	Motor Control Board	1
17	AA06 0763	Tension Spring	1
18	A229 1710	Scanner Stepped Motor Ass'y	1
19	AA04 3900	Timing Belt - S2M 274MM	1
20	AB03 0595	Timing Pulley - 66	1
21	A134 1722	Bracket - Drive Shaft	1
22	A229 1805	Upper Insulating Sheet	1
23	A229 1835	Motor Control Board Bracket	1
24	A229 1694	Shielding Sheet	1
25	A229 1687	Lens Block Holder	2
26	A229 1815	Key Counter Bracket - Front	1
27	A229 1686	Rear Frame Shield	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0707 4050B	Bushing - 4 X5	
102	0354 0060B	Screw - M4X6	
103	0951 4010B	Philips Screw With Washer - M4x10	
104	0805 3368	Ball Bearing - 8x16x5mm	
105	0575 0050E	Hexagon Headless Set Screw - M5x5	
106	0720 0060B	Retaining Ring - M6	
107	1105 0283	Clamp	
108	1105 0267	Harness Clamp - YMC-10-0	
109	0353 0060B	Philips Pan Head Screw - M3x6	
110	0951 4006B	Philips Screw With Washer - M4x6	
111	1105 0230	Clamp	
112	0313 0060B	Philips Pan Head Screw - M3x6	
113	1105 0229	Clamp	

18.Laser Unit (A229)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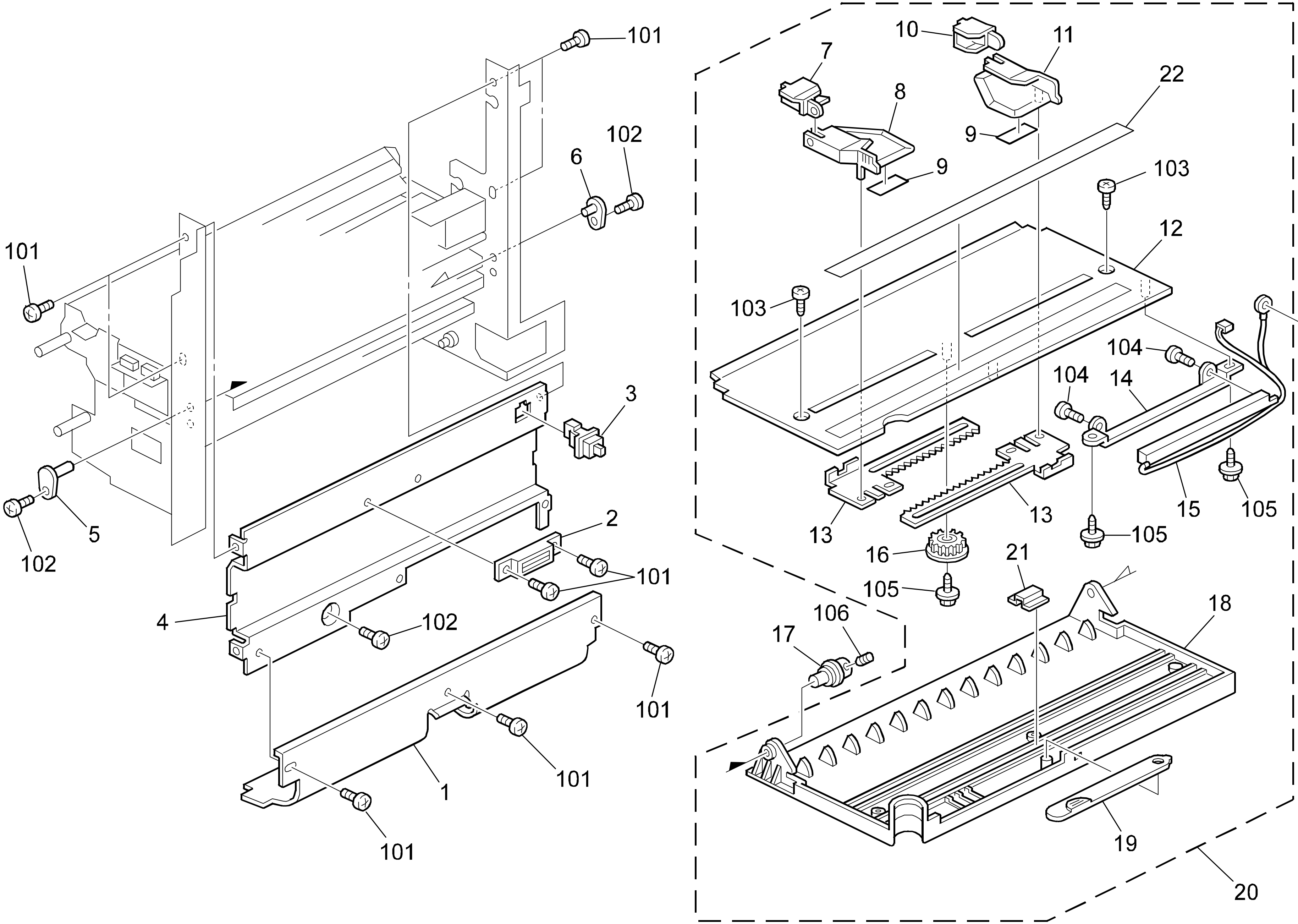
18.Laser Unit (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 1960	Shield 1	1
2	A229 1961	Shield 2	1
3	A229 1962	Seal - 6x364	1
4	A229 1963	Shield 4	1
5	G020 1906	Left Holder - F Theta Mirror	1
6	A229 1903	Mirror Plate - No.1	2
7	G020 1907	Right Holder - F Theta Mirror	1
8	G020 1968	F Theta Mirror	1
9	AC03 0111	1st Mirror	1
10	A229 1905	Mirror Plate - No.2	2
11	G020 1928	2nd Mirror - Laser Unit	1
12	A229 1907	Mirror Plate - No.3	1
13	AC03 0113	3rd Mirror	1
14	A217 2103	Cylindrical Lens Plate	1
15	A229 1916	Cylindrical Lens	1
16	A229 5432	Outer Harness	1
17	A229 1958	Harness Guide	1
18	A229 1924	Shield Glass Shield	1
19	AC01 5026	Shield Glass	1
20	A229 5310	Sync Detector Board	1
21	A229 1919	Sync Detector Board Plate	1
22	G020 1904	Left Holder - BTL Lens	1
23	G020 1903	Right Holder - BTL Lens	1
24	A229 1925	BTL Lens Ass'y	1
25	A229 1923	Lower Cover	1
26	A229 1072	Upper Middle Stay	1
27	A229 1093	ADF Holder	2
28	A229 1900	Optical Housing	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 3006B	Tapping Screw - M3x6	
102	0451 4010B	Tapping Screw - 4x10	
103	0451 4008B	Philips Tapping Screw - M4x8	

19.By-pass Feed Unit (A229)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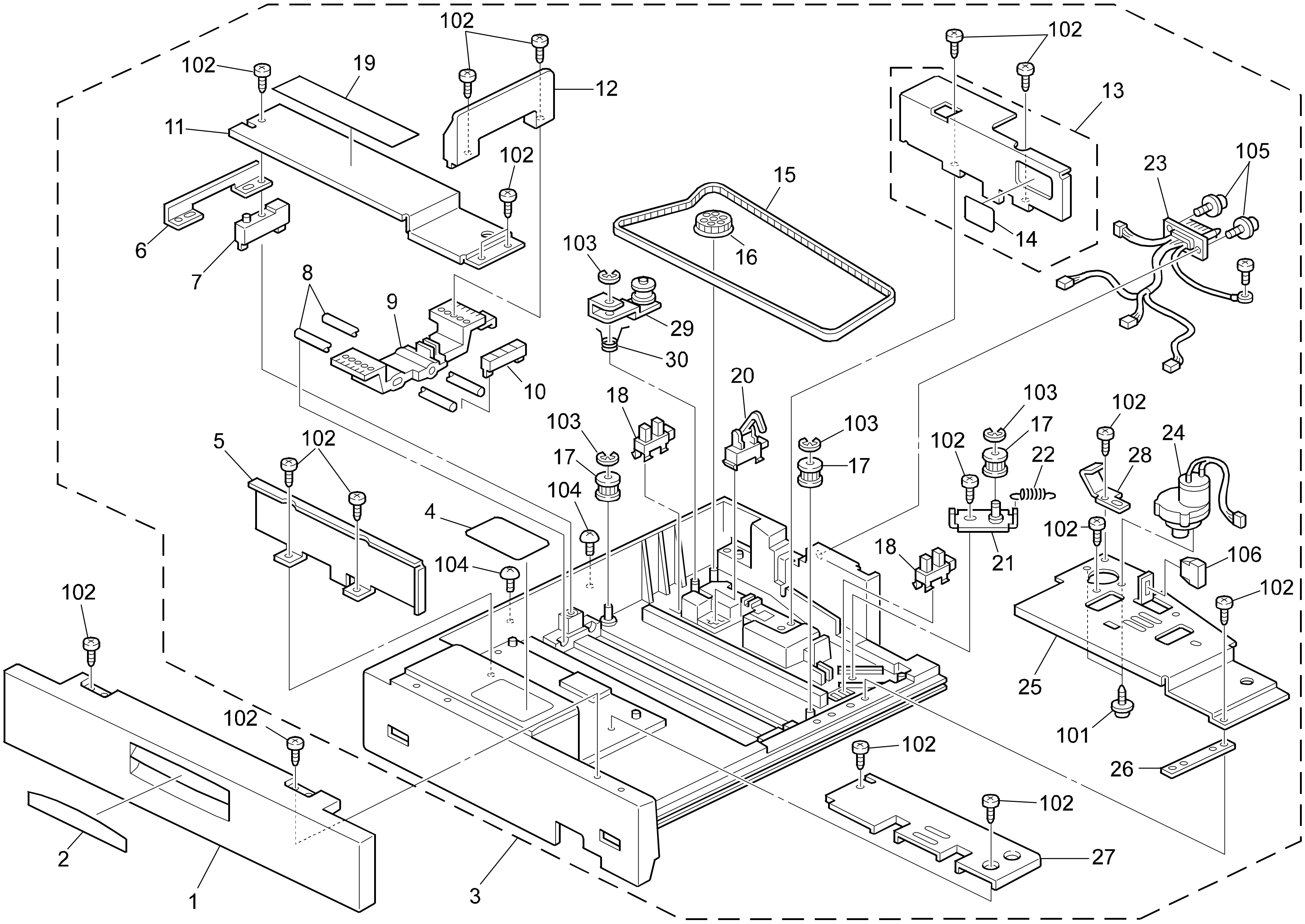
19.By-pass Feed Unit (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A096 2707	Upper Guide - By-pass	1
2	AA02 1025	Magnet Catch	1
3	AW50 0012	Push Switch	1
4	A096 2706	By-pass Feed Cover	1
5	A053 2770	Holder - Manual Feed Table	1
6	A229 2760	By-pass Feed Table Shaft	1
7	A176 2761	Front Sub Guide	1
8	A176 2741	Front Side Fence	1
9	A069 2645	Seal - 0.2x16x47	2
10	A176 2771	Rear Sub Guide	1
11	A176 2751	Rear Side Fence	1
12	A229 2711	By-pass Feed Table	1
13	A096 2780	Feed Guide Gear	2
14	A096 2782	Size Switch Bracket	1
15	A096 5335	Paper Size Switch	1
16	AB01 3492	Gear - 16Z	1
17	A053 2773	Holder - Manual Feed Table	1
18	A229 2721	By-pass Feed cover	1
19	A229 2701	By-pass Feed Table Guide	1
20	A229 2708	By-pass Feed Table Ass'y	1
21	A229 2745	By-pass Feed Table Stay	1
22	A096 2781	By-pass Table Bracket	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0314 0060B	Philips Pan Head Screw - M4x6	
102	0434 0060B	Pan Head Self-tapping Screw - M4x6	
103	0452 3008Z	Bind Tapping Screw - M3x8	
104	0313 0060B	Philips Pan Head Screw - M3x6	
105	0450 3008B	Tapping Screw - M3x8	
106	0573 0040E	Hexagon Headless Set Screw - M3x4	

20.Tandem Tray 1 (A229)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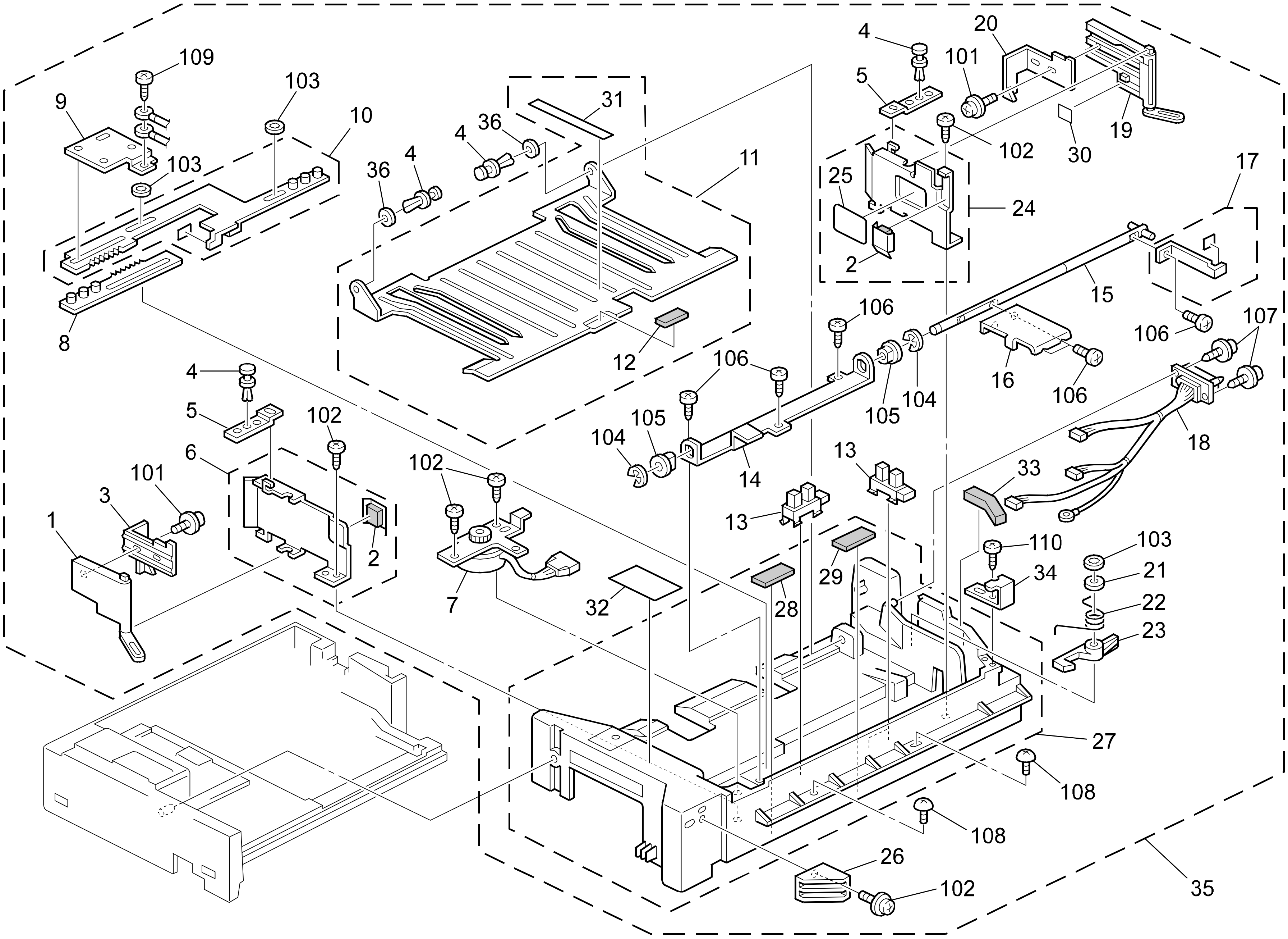
20.Tandem Tray 1 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 6620	Tandem Tray Front Cover	1
2	AA00 2237	Decal - Paper Tray No1	1
3	A096 6630	Left Tandem Tray As[illegible]	1
4	AA00 0136	Decal - Left Tandem Tray	1
5	AF01 6062	Left Front Side Fence	1
6	A096 6641	Grounding Plate 1	1
7	A096 6634	Left Rod Holder	1
8	AA14 0499	Guide Rod	2
9	A096 6632	Tandem Tray Slider	1
10	A096 6633	Right Rod Holder	1
11	A096 6629	Middle Bottom Plate	1
12	AF01 7011	Left End Fence	1
13	A096 6644	Left Rear Side Fence	1
14	AA00 2010	Decal - Paper Level	1
15	AA04 3345	Timing Belt - B30S3M888	1
16	AB03 0417	Timing Pulley - 32Z	1
17	AB03 0418	Timing Pulley - 12Z	3
18	AW02 0056	Photointerruptor - EE-SX4235A-P1	2
19	A096 6678	Decal - Left Paper Set	1
20	AW02 0008	Photointerruptor	1
21	A096 6636	Tightener Bracket	1
22	AA06 0534	Tray Lock Spring - 19mm	1
23	A096 5418	Left Tandem Tray Harness	1
24	A096 5300	Tandem Tray Motor - DC 11W	1
25	A096 6607	Rear Bottom Plate	1
26	A096 6642	Grounding Plate 2	1
27	A096 6640	Front Bottom Plate	1
28	A096 6649	Grounding Spring Plate	1
29	A097 6550	Tightener	1
30	AA06 6559	Tension Spring	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0452 4010B	Tapping Bind Screw - M4x10	
102	0452 4008B	Tapping Screw - M4x8	
103	0720 0040B	Retaining Ring - M4	
104	0344 0050F	Philips Truss Head Screw - M4x5	
105	0965 3012W	Tapping Screw With Flat Washer - M3	
106	1102 6245	Relay Connector - 2P	

21.Tandem Tray 2 (A229)



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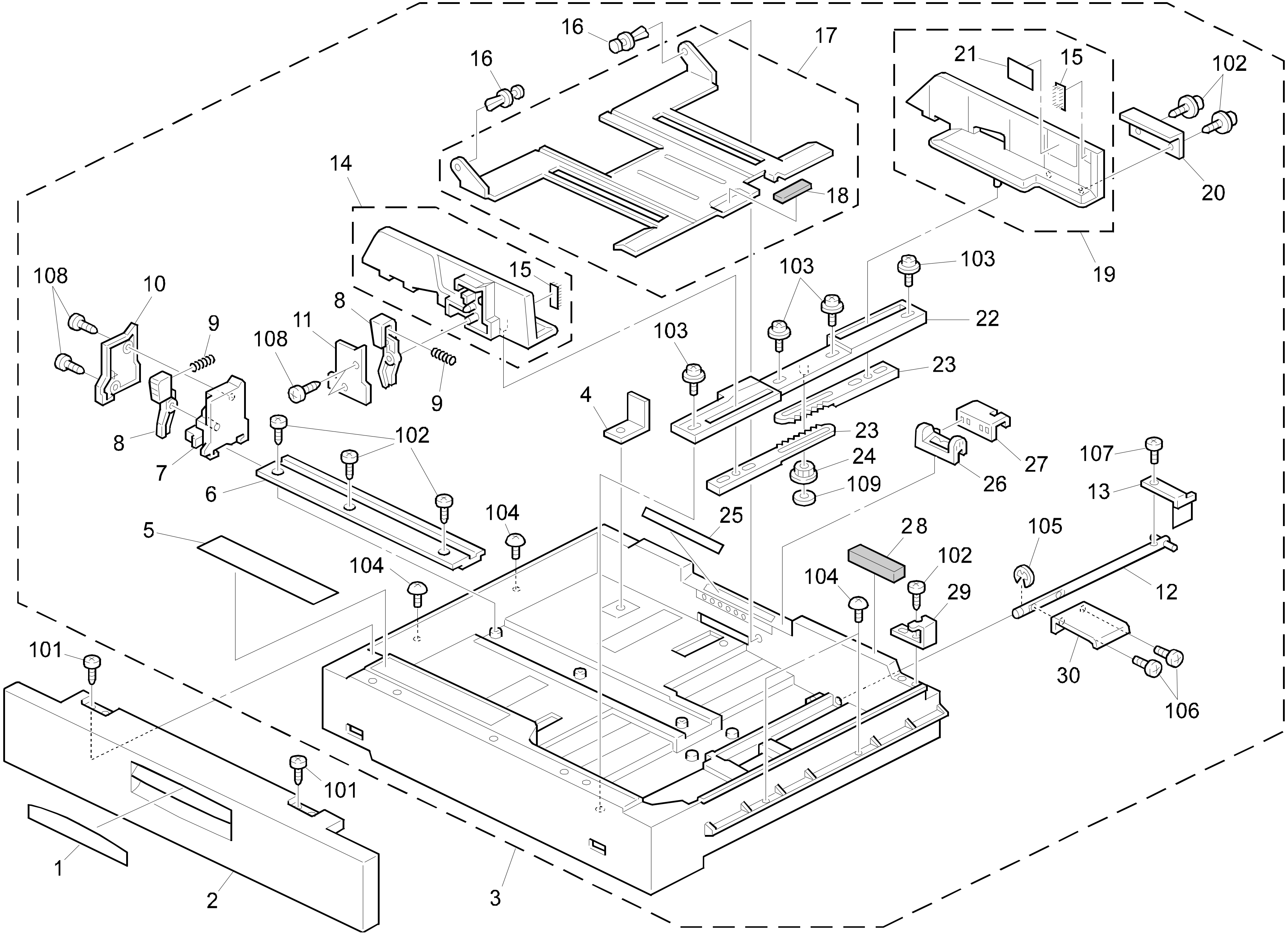
21.Tandem Tray 2 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A096 6646	Front End Fence Guide	1
2	A096 6671	Paper Guide Plate	2
3	A096 6662	Right Front End Fence	1
4	A048 2838	Nylon Rivet	4
5	A096 6676	Side Fence Support Plate	2
6	A096 6645	Right Front Side Fence	1
7	A096 5301	Stepping Motor - DC 17W	1
8	A096 6659	Front End Fence Gear	1
9	A096 6672	Motor Cover	1
10	A176 6696	End Fence Gear	1
11	A096 6673	Bottom Plate	1
12	AF01 3002	Bottom Plate Pad	1
13	AW02 0056	Photointerruptor - EE-SX4235A-P1	2
14	A096 6653	Lift Shaft Bracket	1
15	A096 6652	Lift Shaft	1
16	A096 6695	Lift Lever	1
17	A096 6656	Paper Volume Feeler	1
18	A175 5419	Right Tandem Tray Harness	1
19	A096 6647	Rear End Fence Guide	1
20	A096 6666	Right Rear End Fence	1
21	AA13 2169	Spacer - 5.7x16x1.5	1
22	AA06 6219	Tray Lock Spring	1
23	A096 6668	Release Pawl	1
24	A176 6648	Right Rear Side Fence	1
25	AA00 2010	Decal - Paper Level	1
26	A096 6697	LCT Stopper	1
27	A096 6679	Right Tandem Tray	1
28	AA16 2062	Paper Tray Cushion	1
29	AA16 2072	Cusion	1
30	AA15 0409	End Fence Shield	1
31	A096 6677	Decal - Right Paper Set	1
32	AA00 2229	Decal - Right Tandem Tray	1
33	A096 6694	Paper Guide Seal	1
34	A176 6695	Misfeed Removal Guide	1
35	A176 6650	Right Ass'y	1
36	AA15 0411	Base Plate Shield	2
101	0951 3006B	Philips Screw With Flat Washer - M3x6	
102	0452 4008B	Tapping Screw - M4x8	
103	0805 0083	Retaining Ring - M4	
104	0720 0060B	Retaining Ring - M6	
105	0805 3389	Bushing - 8x10x6mm	
106	0314 0080B	Philips Pan Head Screw - M4x8	
107	0965 3012W	Tapping Screw With Flat Washer - M3	
108	0344 0050F	Philips Truss Head Screw - M4x5	
109	0950 4008Z	Philips Truss Screw - M4x8	
110	0951 4006B	Philips Screw With Washer - M4x6	

22.Universal Tray (A229)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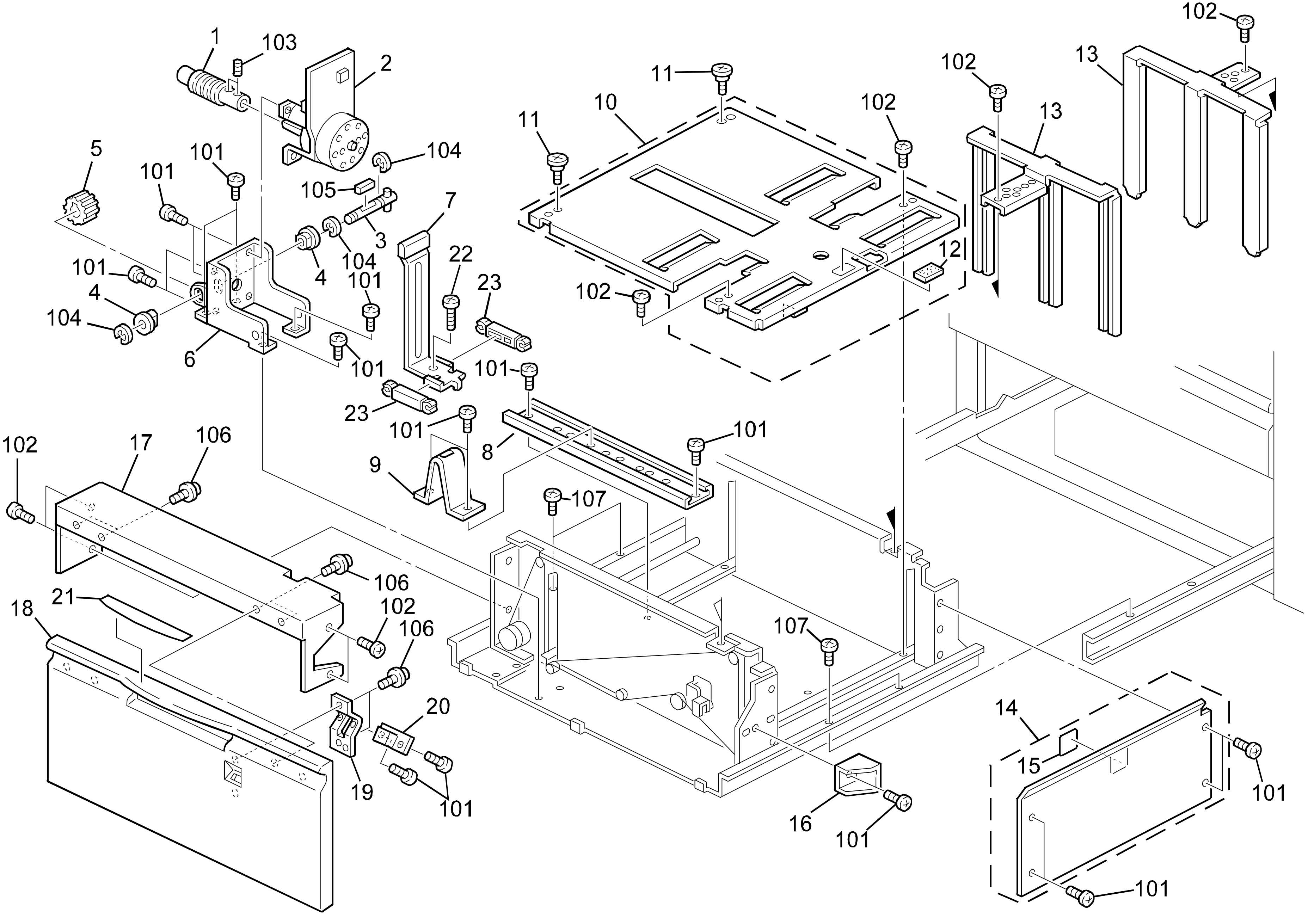
22.Universal Tray (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	AA00 2238	Decal - Cover No.2	1
2	A229 6589	Paper Tray Front Cover	1
3	A229 6511	Universal Tray - LT	1
3	A229 6512	Universal Tray - A4	1
4	AF01 6079	Left Rear Side Fence	1
5	AA00 0134	Decal - Universal Tray	1
6	A096 6564	End Fence Plate	1
7	A096 6562	End Fence	1
8	A096 6537	Stopper Lever	2
9	AA06 6551	Stopper Spring - 24mm	2
10	A096 6563	End Fence Cover	1
11	A096 6536	Side Fence Cover	1
12	A096 6524	Lift Shaft	1
13	A096 6527	Paper Guide Feeler	1
14	A096 6534	Front Side Fence	1
15	A096 6553	Side Fence Pad	2
16	A048 2838	Nylon Rivet	2
17	A096 6556	Tray Bottom Plate	1
18	AF01 3005	Bottom Plate Pad	1
19	A096 6541	Gear Side Fence	1
20	A176 6570	Paper Stopper	1
21	AA00 2010	Decal - Paper Level	1
22	A096 6544	Side Fence Plate - A	1
22	A096 6545	Side Fence Plate - L	1
23	A096 6539	Side Fence Gear	2
24	AB01 4094	Side Fence Gear	1
25	AA00 2235	Decal Paper Size - LT	1
25	AA00 2236	Decal Paper Size - A4	1
26	A096 6577	Size Sensor Slider	1
27	A096 6578	Size Sensor Plate	1
28	AA15 3004	Paper Guide Seal - 3	1
29	A176 6695	Misfeed Removal Guide	1
30	A096 6526	Lift Lever	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0452 4008B	Tapping Screw - M4x8	
102	0414 0082B	Binding Self Tapping Screw - M4x8	
103	0951 3008B	Philips Screw With Flat Washer - M3x8	
104	0344 0050F	Philips Truss Head Screw - M4x5	
105	0720 0060B	Retaining Ring - M6	
106	0314 0080B	Philips Pan Head Screw - M4x8	
107	0313 0060B	Philips Pan Head Screw - M3x6	
108	0413 0082B	Tapping Screw - M3x8	
109	0805 0073	Retaining Ring - M5	

23.LCT Tray 1 (A229)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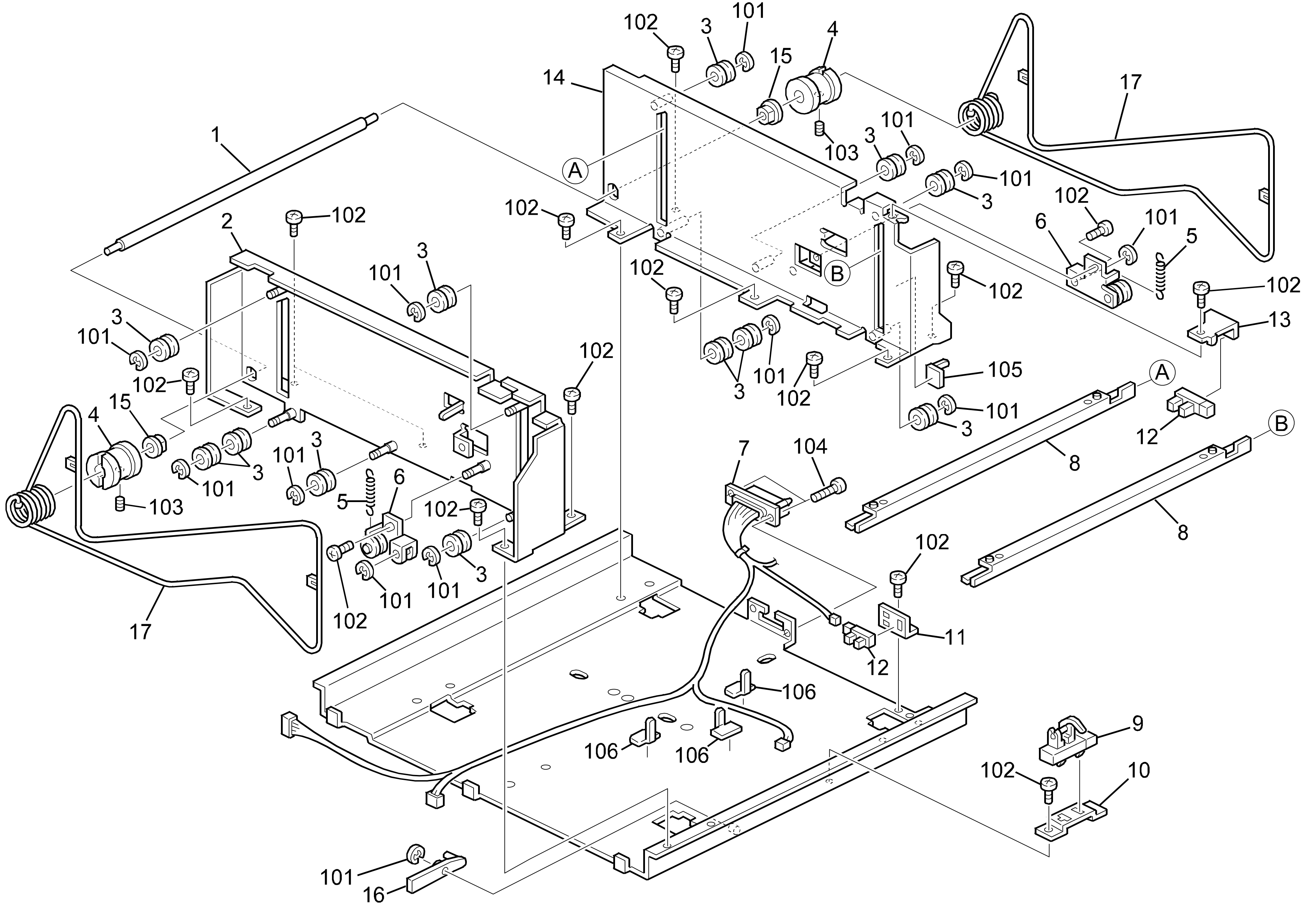
23.LCT Tray 1 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	5446 2698	Worm Gear	1
2	AX06 0130	DC Motor - DC24V 18W	1
3	A096 6784	LCT Drive Shaft	1
4	5053 0223	Bushing - 8mm	2
5	5446 2702	Gear - 22T	1
6	A096 6782	Motor Bracket	1
7	A096 6760	End Fence	1
8	A096 6752	End Fence Rail	1
9	A096 6759	LCT Support Plate	1
10	A096 6765	Tray Bottom Plate	1
11	5442 2117	Shoulder Screw - Hinge	2
12	5201 2858	Friction Pad	1
13	AF01 6057	Side Fence	2
14	A096 6745	Right Side Plate	1
15	5446 2638	Decal - paper Lower Limit	1
16	A229 6697	LCT Stopper	1
17	A096 6808	LCT Inner Cover	1
18	A229 6806	LCT Front Cover	1
19	A096 6811	Push Switch Bracket	1
20	A079 5794	Push Switch - Paper Tray	1
21	AA00 2239	Decal - Cover No.3	1
22	5408 2035	Stepped Screw - M4	1
23	A096 6758	End Fence Slider	2

Index No.	Part No.	Description	Q'ty Per Assembly
101	0434 0060B	Pan Head Self-tapping Screw - M4x6	
102	0414 0080B	Binding Self-tapping Screw - M4x8	
103	0574 0050E	Hexagon Headless Set Screw - M4x5	
104	0720 0060E	Retaining Ring - M6	
105	0930 0400A	Palarel Key	
106	0965 3008B	Tapping Screw With Washer - M3x8	
107	0801 0146	Screw - M4X4	

24.LCT Tray 2 (A229)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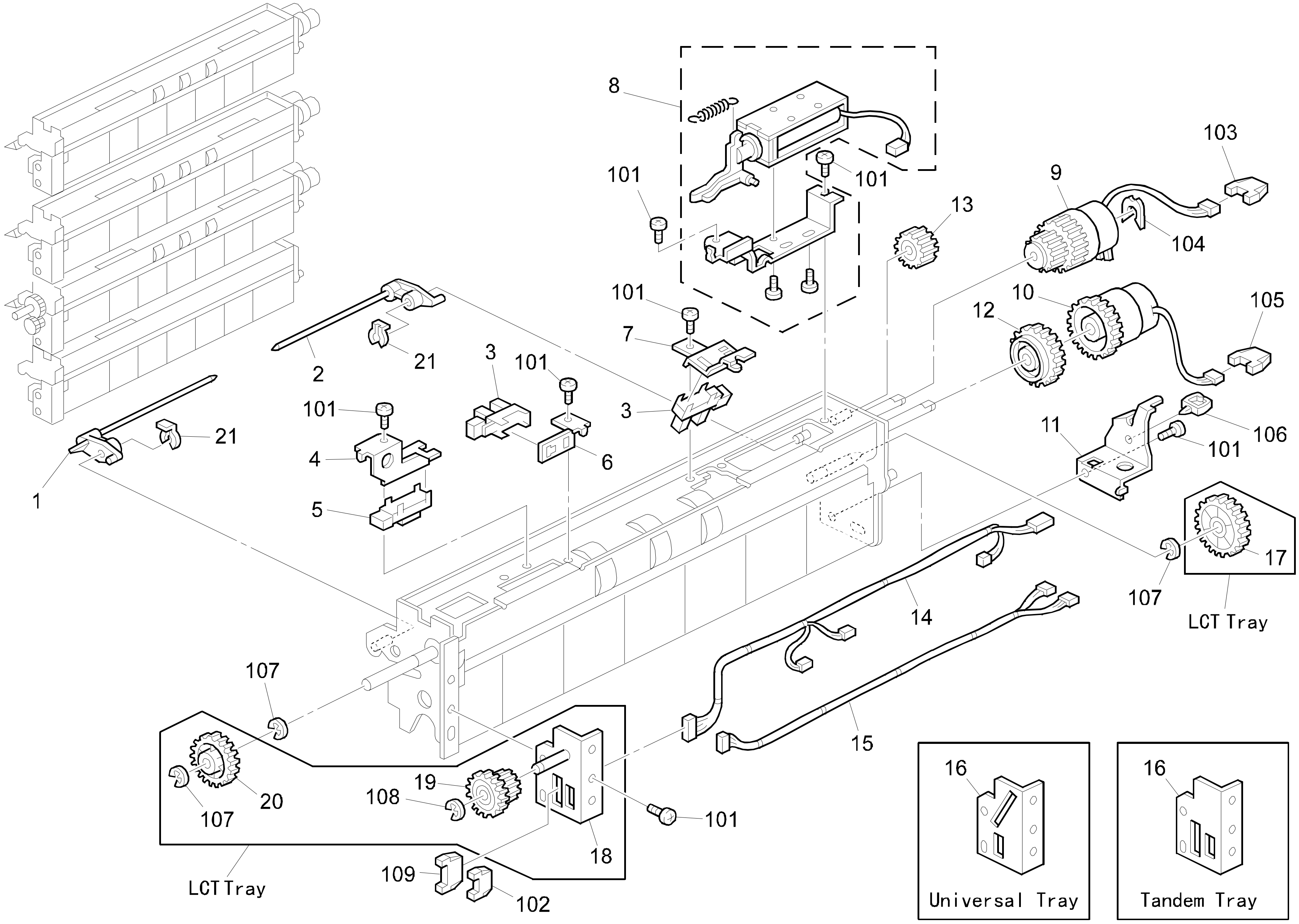
24.LCT Tray 2 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	AA14 0529	Drive Wire Shaft	1
2	A096 6736	Front Side Plate	1
3	AB03 2058	Wire Pulley - M10	12
4	5446 2671	Drive Pulley - Paper Tray	2
5	5403 1030	Tension Spring	2
6	A028 3356	Rear Wire Tightener	2
7	A096 7632	LCT Harness	1
8	A096 6770	Bottom Plate Stay	2
9	AW02 0008	Photointerruptor	1
10	A096 6799	Paper Sensor Bracket	1
11	A096 6790	Lower Sensor Bracket	1
12	AW02 0056	Photointerruptor - EE-SX4235A-P1	2
13	A096 6794	Upper Sensor Bracket	1
14	A096 6741	Rear Side Plate	1
15	5053 0419	Bushing - 10mm	2
16	5415 2642	Lock Arm	1
17	AA05 0083	LCT Drive Wire - 1785mm	2

Index No.	Part No.	Description	Q'ty Per Assembly
101	0720 0040B	Retaining Ring - M4	
102	0434 0060B	Pan Head Self-tapping Screw - M4x6	
103	0575 0050E	Hexagon Headless Set Screw - M5x5	
104	0313 0080B	Philips Pan Head Screw - M3x8	
105	1105 0278	Harness Clamp - LWS-1S	
106	1105 0291	Harness Clamp - LWS-3S	

25.Paper Feed Unit 1 (A229)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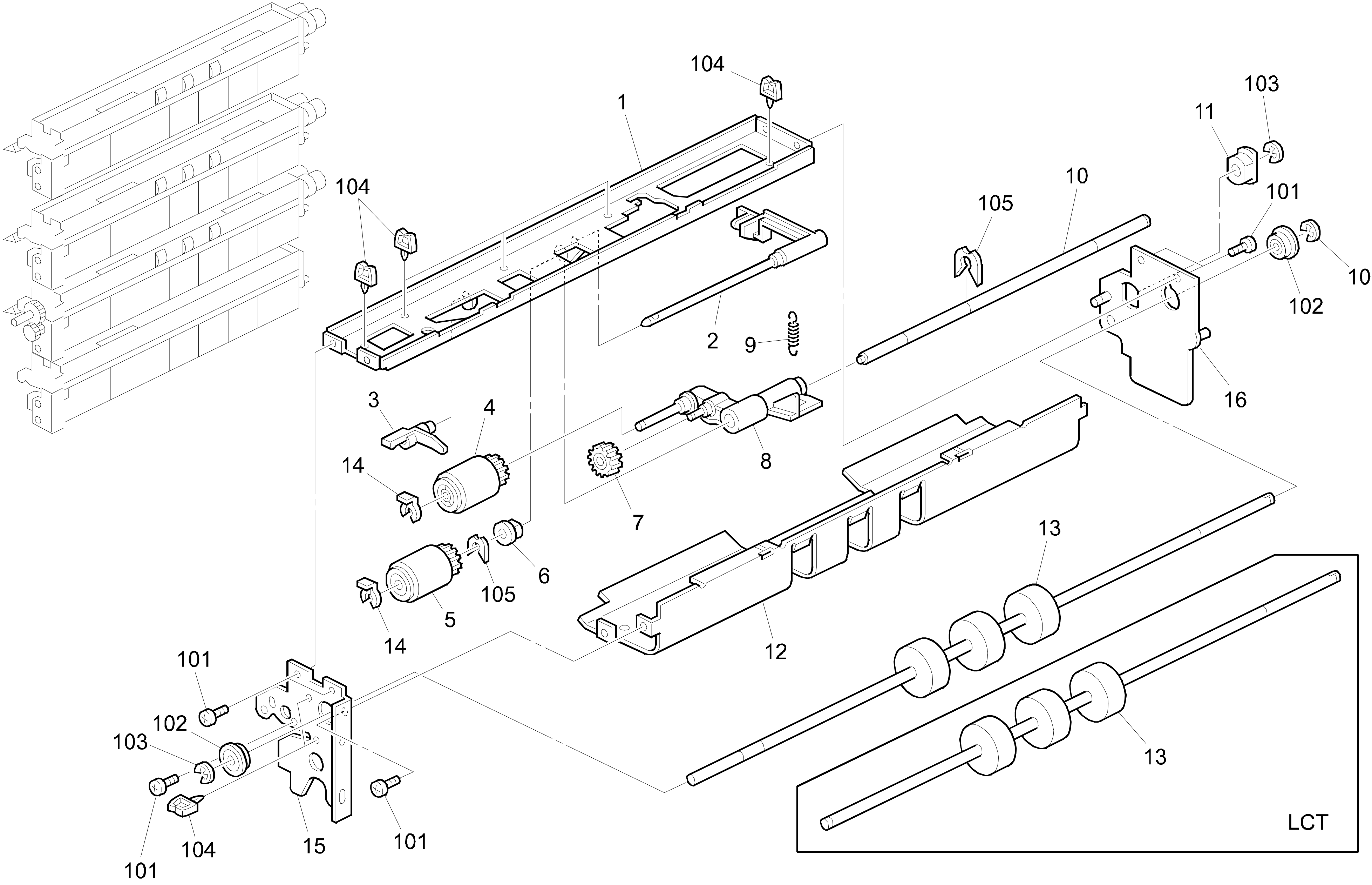
25.Paper Feed Unit 1 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
*	A229 6200	Paper Feed Unit - Universal	1
*	A229 6220	Paper Feed Unit - Tandem	1
*	A229 6210	Paper Feed Unit - LCT	1
1	A096 6363	Front Paper Flattener	1
2	A096 6360	Paper Flattener	1
3	AW02 0056	Photointerruptor - EE-SX4235A-P1	2
4	A229 6353	Photo Refiection Sensor Bracket	1
5	AW01 0049	Photo Reflection Sensor	1
6	A229 6345	Paper End Sensor Bracket	1
7	A229 6358	Paper Sensor Bracket	1
8	A229 6355	Pick-up Solenoid Ass'y	1
9	AX20 0148	Magnetic Clutch	1
10	AX20 0147	Magnetic Clutch	1
11	A229 6366	Magnetic Clutch Arm	1
12	AB01 3775	Gear - 33Z	1
13	AB01 3000	Idler Gear - 18z	1
14	A229 5497	Upper Harness	1
15	A229 5496	Lower Harness	1
16	A229 6375	Paper Feed Unit Stay - Universal	1
16	A229 6382	Paper Feed Unit Stay - Tandem	1
17	AB01 4069	Drive Gear - Misfeed Removal	1
18	A229 6381	Paper Feed Unit Stay Ass'y	1
19	AB01 3780	Gear	1
20	AB01 3778	Gear - 32Z	1
21	5447 2681	Snap Ring	2

Index No.	Part No.	Description	Q'ty Per Assembly
101	0434 0060B	Pan Head Self-tapping Screw - M4x6	
102	1102 6249	Relay Connector - 6p	
103	1102 6259	Connector - 2P	
104	0805 0088	Retaining Ring - M6	
105	1102 6245	Relay Connector - 2P	
106	1105 0199	Clamp	
107	0720 0060B	Retaining Ring - M6	
108	0720 0040B	Retaining Ring - M4	
109	1102 6254	Connector - 11P	

26.Paper Feed Unit 2 (A229)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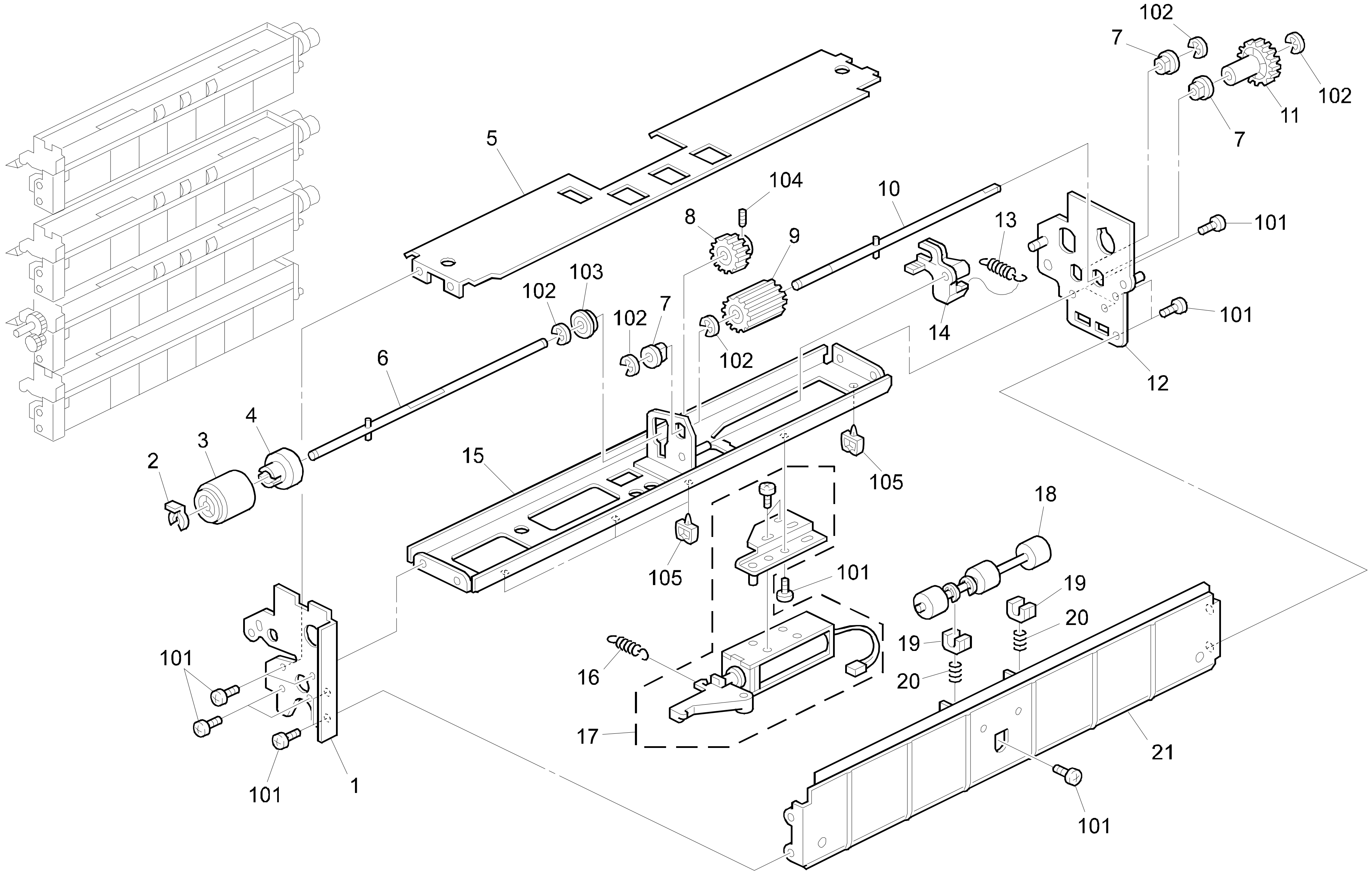
26.Paper Feed Unit 2 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 6346	Feed Stay	1
2	A096 6362	Paper End Feeler	1
3	A096 6344	Paper End Actuater	1
4	**AF03 0020**	**Pick-up Roller**	**1**
5	**AF03 1022**	**Paper Feed Roller**	**1**
6	AA08 2070	Bushing - 8x16x7	1
7	5447 2706	Gear - 15T	1
8	A134 2860	Pick-up Arm	1
9	AA06 0523	Pick-up Pressure Sping	1
10	AA14 0675	Feed Roller Shaft	1
11	AA08 3009	Clutch Roller - 8x18x11	1
12	A229 6339	Feed Guide Plate	1
13	AF02 0425	Drive Transport Roller - Grip	1
13	AF02 0426	Drive Transport Roller - LCT	1
14	5447 2681	Snap Ring	2
15	A229 6335	Front Side Plate	1
16	A229 6330	Rear Side Plate	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0434 0060B	Pan Head Self-tapping Screw - M4x6	
102	0742 3808	Ball Bearing - 8x16x5	
103	0720 0060B	Retaining Ring - M6	
104	1105 0199	Clamp	
105	0805 0088	Retaining Ring - M6	

27.Paper Feed Unit 3 (A229)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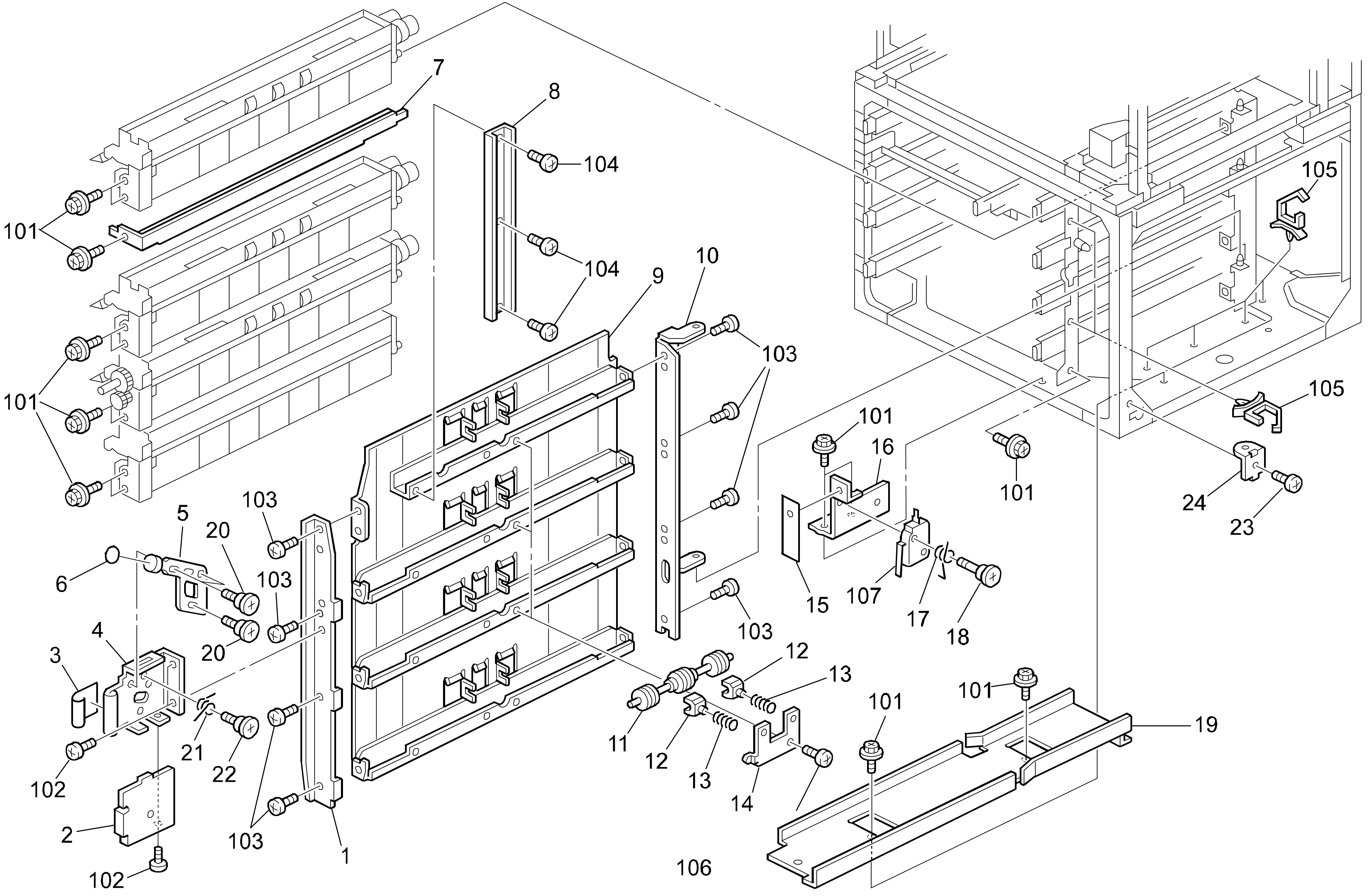
27.Paper Feed Unit 3 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 6335	Front Side Plate	1
2	5447 2681	Snap Ring	1
3	**AF03 2023**	**Separation Roller**	**1**
4	A247 2900	Torque Limiter - 53mnxm	1
5	A229 6338	Reverse Guide Plate	1
6	A229 6307	Reverse Driven Shaft	1
7	AA08 2046	Bushing - 6x12x6	3
8	AB01 1391	Driven Reverse Gear - 21Z	1
9	AB01 1392	Drive Reverse Gear - 24Z	1
10	A229 6306	Reverse Drive Shaft	1
11	AB01 3776	Gear - 30Z	1
12	A229 6330	Rear Side Plate	1
13	AA06 0636	Pressure Spring	1
14	A229 6309	Reverse Pressure Lever	1
15	A229 6303	Reverse Stay	1
16	AA06 0575	Release Spring	1
17	A229 6315	Reverse DC Solenoid	1
18	A100 2602	Transport Pressure Roller	1
19	AA08 0156	Bushing - M4	2
20	AA06 3487	Spring - 10mm	2
21	A229 6370	Pape Guide Plate	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0434 0060B	Pan Head Self-tapping Screw - M4x6	
102	0720 0040B	Retaining Ring - M4	
103	0805 3145	Ball Bearing - 6x12x4mm	
104	0573 0030E	Hexagon Headless Set Screw - M3x3	
105	1105 0199	Clamp	

28.Vertical Transport (A229)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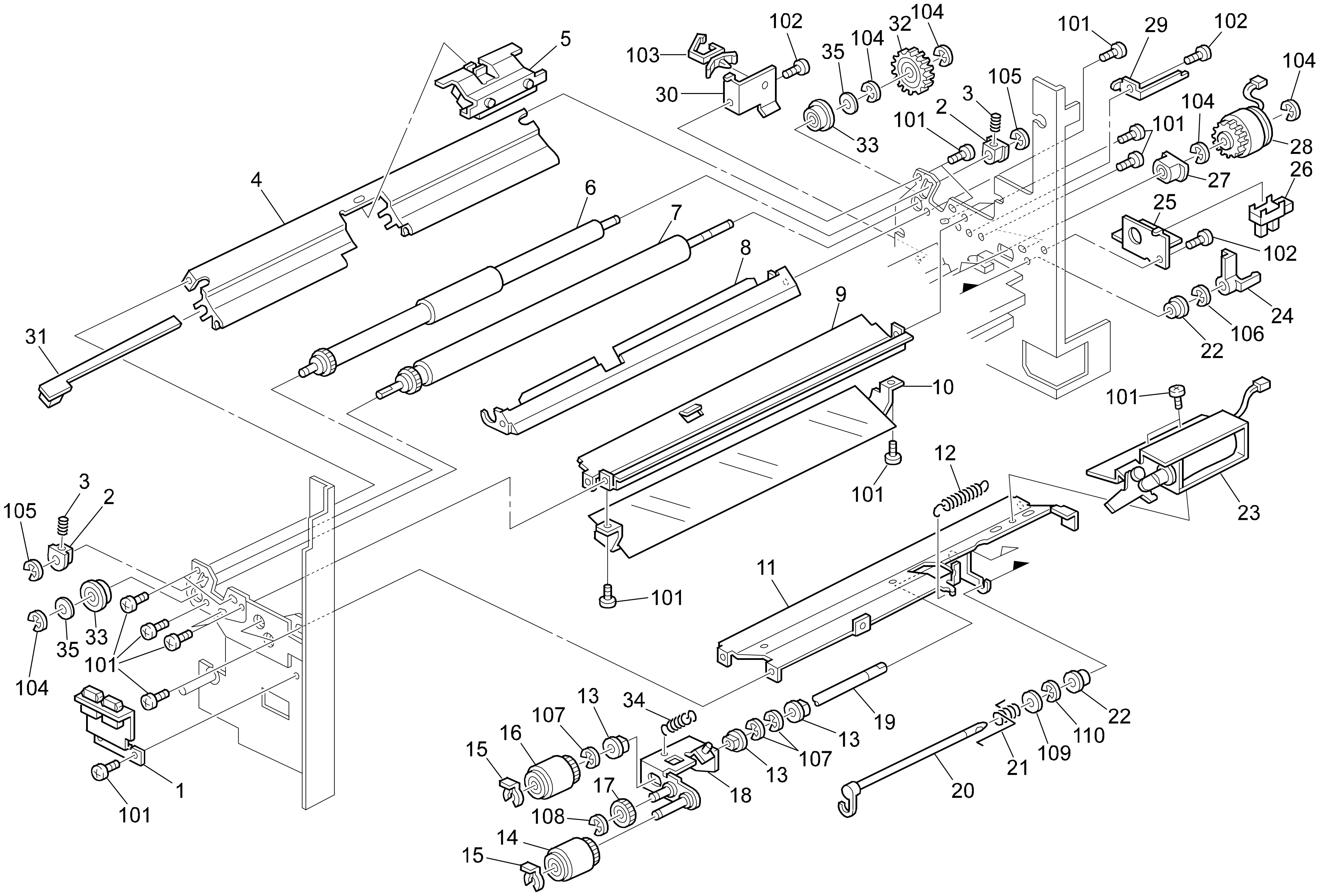
28.Vertical Transport (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 6403	Front Side Plate	1
2	A096 6413	Release Lever Cover	1
3	A029 2984	Decal - Grip	1
4	A096 6411	Release Lever Bracket	1
5	A029 2858	Release Lever	1
6	AA00 1326	Decal - A1	1
7	A096 6191	Middle Guide Plate	1
8	A229 6409	Pressure Stay	1
9	A229 6405	Guide Plate - Vertical Transport	1
10	A229 6404	Rear Side Plate	1
11	AF02 0295	Vertical Driven Roller	3
12	AA08 0156	Bushing - M4	6
13	AA06 3487	Spring - 10mm	6
14	A096 6402	Pressure Plate Driven Roller	3
15	A096 5528	Micro Switch Sheet	1
16	A096 5529	Micro Switch Bracket	1
17	A423 4433	Spring	1
18	A423 4432	Shoulder Screw - M2.5	1
19	A096 3710	Collection Tank Guide	1
20	5201 1796	Stepped Screw - M4	3
21	5446 2846	Release Spring - Vertical Transport	1
22	5403 6246	Stepped Screw - Cleaning	1
23	AA14 3396	Screw - M4X4	1
24	A229 1344	Hinge Guide Plate - Right Lower	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 4008B	Philips Tapping Screw - M4x8	
102	0951 4008B	Philips Screw With Washer - M4x8	
103	0434 0080B	Pan Head Self-tapping Screw - M4x8	
104	0434 0060B	Pan Head Self-tapping Screw - M4x6	
105	1105 0291	Harness Clamp - LWS-3S	
106	0951 4006B	Philips Screw With Washer - M4x6	
107	1204 2355	Micro Switch - AM51632A531	

29.Paper Registration 1 (A229)



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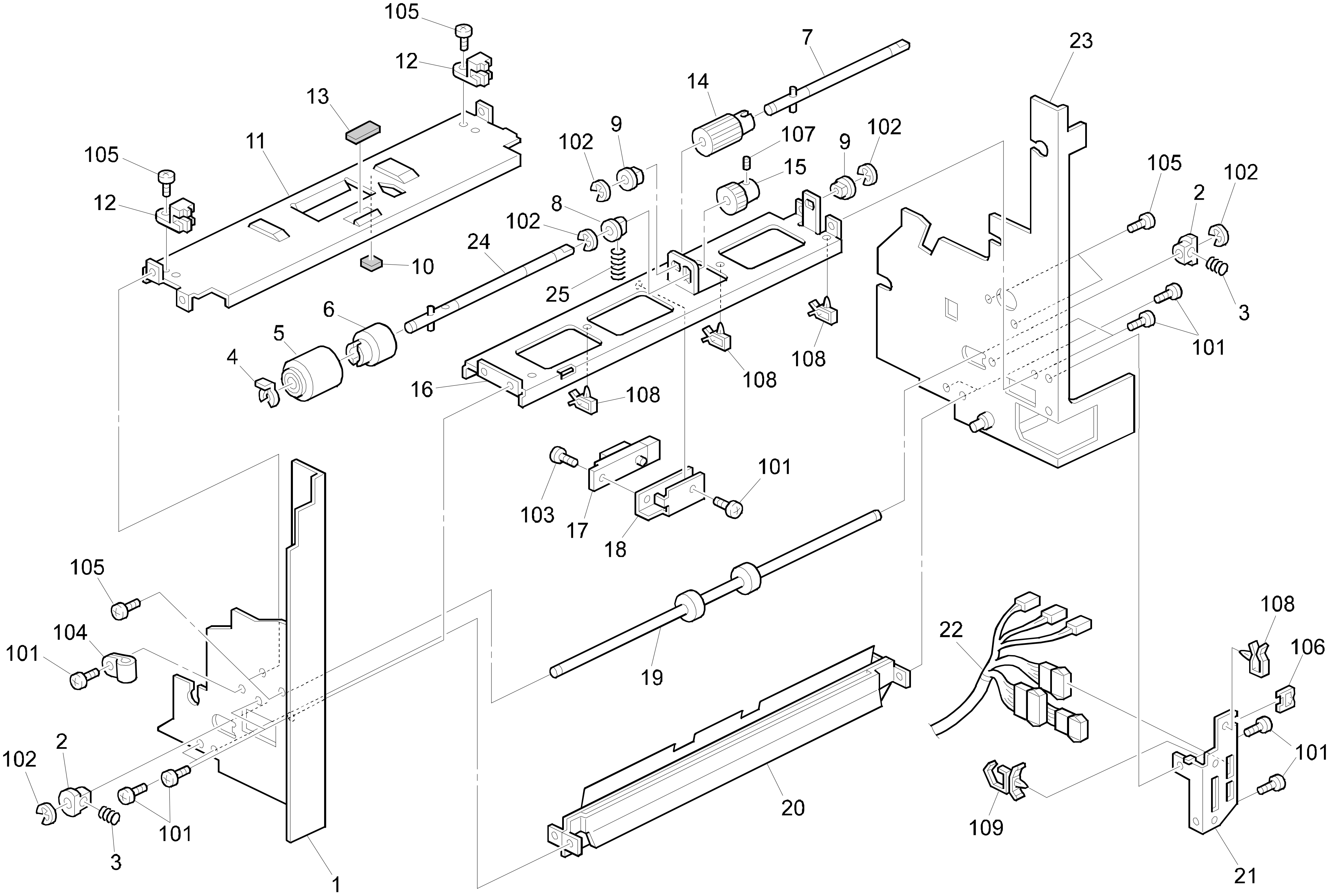
29.Paper Registration 1 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A096 2597	Front Connector Bracket	1
2	5205 2697	Bushing - Upper Registration Roller	2
3	5442 2754	Spring - Registration Roller	2
4	A229 2619	Sensor Board Guide	1
5	A096 2607	Paper Dust Cleaner	1
6	A229 2618	Upper Registration Roller	1
7	A229 2617	Lower Registration Roller	1
8	A096 2612	Lower Registration Guide	1
9	A096 2626	Front Upper Resistration Guide	1
10	A096 2622	Front Lower Registration Guide	1
11	A096 2687	Upper Feed Stay	1
12	AA06 0517	Pick-up Release Spring	1
13	5053 0223	Bushing - 8mm	3
14	**AF03 0021**	**Pick-up Roller**	**1**
15	5447 2681	Snap Ring	2
16	**AF03 1021**	**Paper Feed Roller**	**1**
17	5447 2706	Gear - 15T	1
18	A096 2690	Pick-up Roller Arm	1
19	AA14 0684	Feed Shaft	1
20	A096 2697	Paper End Feeler	1
21	AA06 6213	Feeler Spring	1
22	5443 2668	Bushing - 4x6x7mm	2
23	A096 2692	Pick-up Solenoid - By-pass	1
24	A096 2700	Paper End Shutter	1
25	A229 2715	Paper End Sensor Bracket	1
26	AW02 0056	Photointerruptor - EE-SX4235A-P1	1
27	5205 2865	Bushing - Paper Feed Roller	1
28	AX20 0154	Magnetic Clutch	1
29	A247 2704	Magnetic Clutch Bracket	1
30	A229 2713	Magnetic Clutch Bracket	1
31	A096 5200	Registration Sensor Board	1
32	AB01 4077	Registration Roller Gear	1
33	A247 2800	Ball Bearing - 8x12x5	2
34	AA06 0518	Pick-up Pressure Spring	1
35	AA13 2025	Spacer - 1x8x12	2

Index No.	Part No.	Description	Q'ty Per Assembly
101	0314 0060B	Philips Pan Head Screw - M4x6	
102	0434 0060B	Pan Head Self-tapping Screw - M4x6	
103	1105 0260	Wire Saddle	
104	0720 0060B	Retaining Ring - M6	
105	0720 0040B	Retaining Ring - M4	
106	0720 0030B	Retaining Ring - M3	
107	0720 0060E	Retaining Ring - M6	
108	0720 0040E	Retaining Ring - M4	
109	0701 0040B	Flat Washer - M4	
110	0720 0030E	Retaining Ring - M3	

30.Paper Registration 2 (A229)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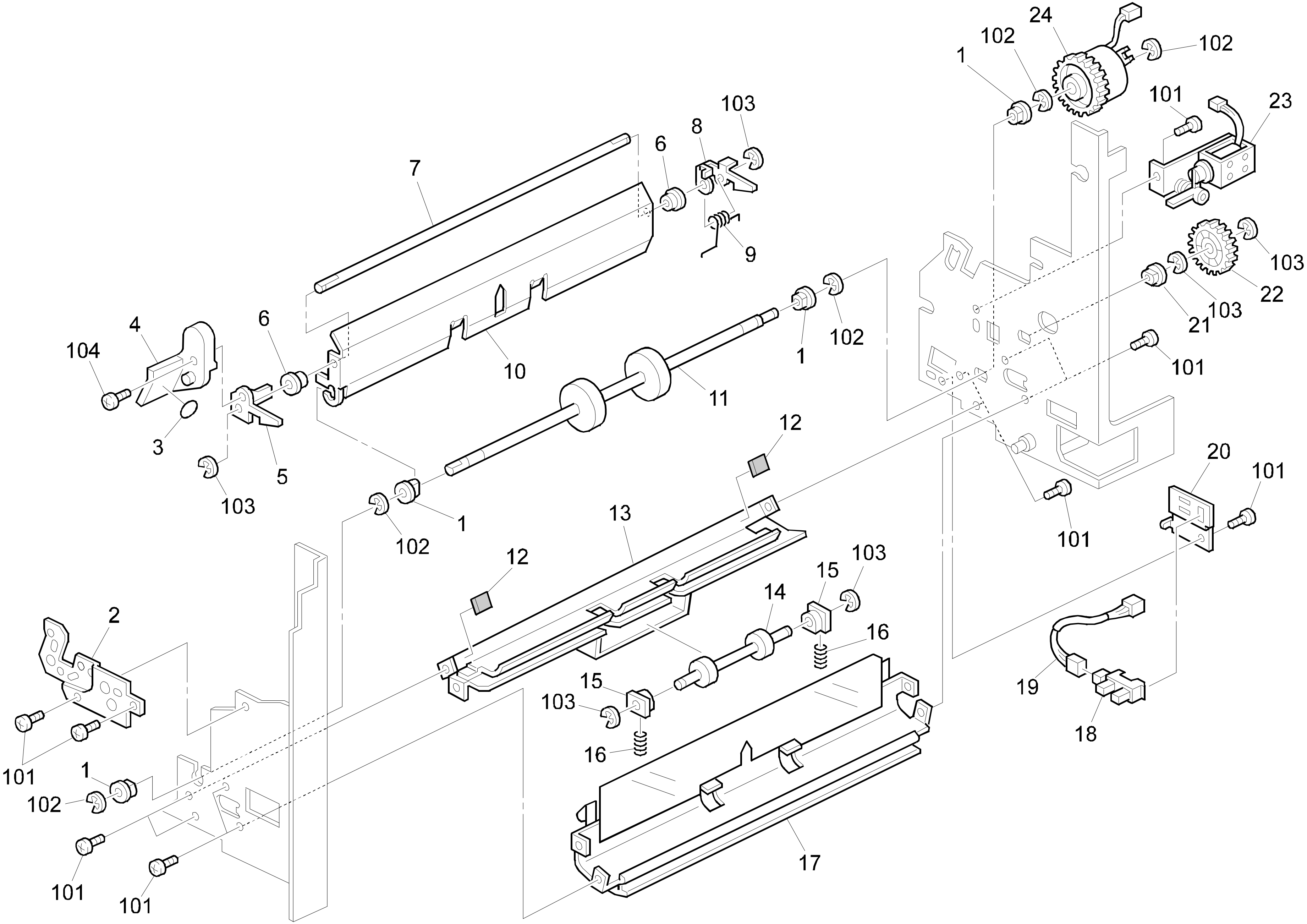
30.Paper Registration 2 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 2600	Front Side Plate	1
2	5205 2697	Bushing - Upper Registration Roller	2
3	AA06 3254	Driven Roller Spring	2
4	5447 2681	Snap Ring	1
5	**AF03 2021**	**Separation Roller**	**1**
6	A247 2900	Torque Limiter - 53mnxm	1
7	A247 2682	Drive Shaft - Separator	1
8	AA08 0037	Bushing - 6mm	1
9	5053 0447	Bushing - 6mm	2
10	A229 2692	Damping Insulation	1
11	A096 2703	Lower Guide - By-pass	1
12	A096 2704	Guide Holder	2
13	A053 2916	Friction Pad - B	1
14	AB01 3773	Gear - 18Z	1
15	AB01 3729	Gear - 18Z	1
16	A096 2682	Separation Roller Bracket	1
17	AW01 0048	Photo Sensor - Gp2a28n1	1
18	A229 2750	Sensor Bracket	1
19	AF02 2110	Transport Driven Roller	1
20	A096 2661	Paper Bank Relay Guide	1
21	A229 2609	Connector Bracket	1
22	A229 5451	Manual Feed Unit Harness	1
23	A229 2605	Rear Side Plate	1
24	A247 2683	Reverse Roller Shaft	1
25	AA06 3164	Spring - Pressure - Separator	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0434 0060B	Pan Head Self-tapping Screw - M4x6	
102	0720 0040B	Retaining Ring - M4	
103	0314 0080B	Philips Pan Head Screw - M4x8	
104	1105 0005	Nylon Clamp - 3n	
105	0314 0060B	Philips Pan Head Screw - M4x6	
106	1105 0328	Harness Clamp - ES-0505	
107	0574 0040B	Hexagon Headless Set Screw - M4x4	
108	1105 0087	Clamp	
109	1105 0291	Harness Clamp - LWS-3S	

31.Paper Registration 3 (A229)



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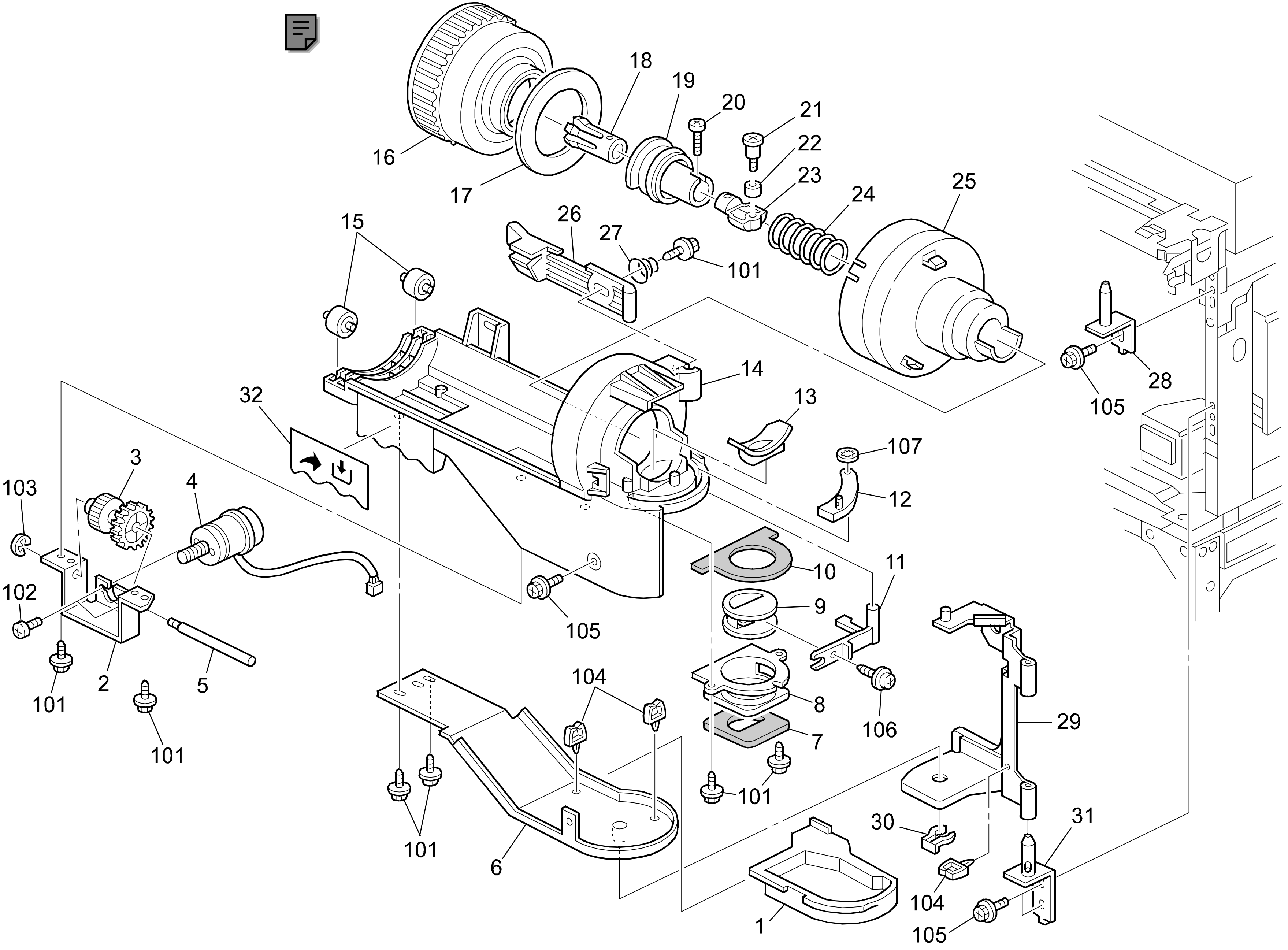
31.Paper Registration 3 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	5053 0223	Bushing - 8mm	4
2	A096 2593	Front Support Plate	1
3	AA00 1213	Decal - B2	1
4	A229 2717	Lock Lever	1
5	A096 2633	Front Lock	1
6	5443 2668	Bushing - 4x6x7mm	2
7	AA14 0486	Lock Shaft	1
8	A096 2634	Rear Lock	1
9	AA06 6211	Rear Lock Spring	1
10	A229 2647	Middle Guide Plate	1
11	AF02 0422	Drive Transport Roller	1
12	A469 2123	Rubber Cushion - 1x10x10mm	2
13	A096 2672	Duplex Exit Guide	1
14	AF02 0288	Duplex Exit Roller	1
15	AA08 0034	Bushing - 4x5x7	2
16	AA06 3255	Exit Roller Spring	2
17	A229 2651	Guide Plate Ass'y	1
18	AW02 0056	Photointerruptor - EE-SX4235A-P1	1
19	A096 5432	Duplex Relay Harness	1
20	A229 2719	Sensor Bracket	1
21	5053 0447	Bushing - 6mm	1
22	AB01 1128	Gear - 40Z	1
23	A096 2642	Guide Shutter Solenoid	1
24	AX20 0150	Magnetic Clutch - 343mnxm	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0434 0060B	Pan Head Self-tapping Screw - M4x6	
102	0720 0060B	Retaining Ring - M6	
103	0720 0030B	Retaining Ring - M3	
104	0313 0050B	Philips Pan Head Screw - M3x5	

32.Toner Bottle Holder (A229)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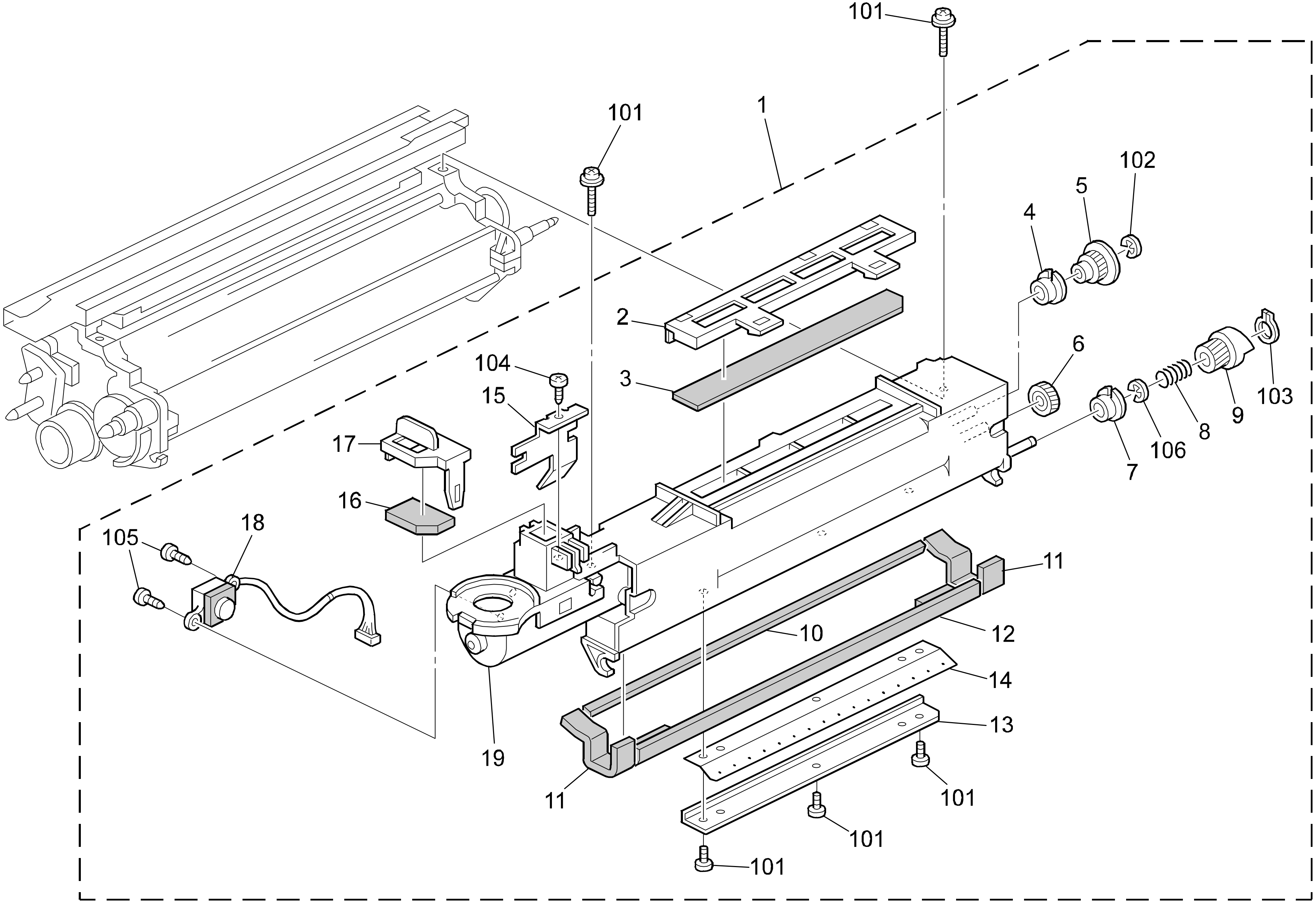
32.Toner Bottle Holder (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 3258	Toner Catchpan	1
2	A229 3238	Toner Bottle Bracket	1
3	AB01 7464	Connecting Gear	1
4	A229 3240	DC Motor	1
5	AA14 5811	Idler Shaft - Toner Bottle	1
6	A229 3251	Turn Bracket	1
7	A229 3263	Outer Shutter Shield	1
8	A229 3261	Outer Shutter	1
9	A229 3262	Inner Shutter	1
10	A229 3266	Upper Shutter Shield	1
11	A229 3264	Shutter Lever	1
12	A229 3285	Shutter Cover	1
13	A229 3219	Rubber Bushing - Toner Supply Unit	1
14	A229 3223	Bottle Holder	1
15	A096 3224	Bottle Roller	2
16	A229 3343	Tonner Supply Gear (RIC A4)	1
16	A229 3340	Tonner Supply Gear (RIC LT)	1
16	A229 3346	Tonner Supply Gear (Others)	1
17	AA15 1894	Seal - 67x53x2	1
18	A134 3180	Bottle Chuck	1
19	A204 3177	Toner Slider	1
20	A134 3216	Screw	1
21	AA14 3758	Setepped Screw	1
22	A229 3232	Chuck Roller	1
23	A134 3179	Chuck Shaft	1
24	AA06 3366	Chuck Spring	1
25	A229 3221	Toner Bottle Stopper - Ass'y	1
26	A229 3281	Toner Bottle Pawl	1
27	AA06 3575	Toner Bottle Spring	1
28	A229 3305	Contact Point Stay	1
29	A229 3271	Hinge Bracket	1
30	A222 2724	External Circlip - Mm8	1
31	A096 3404	Lower Positioning Pin	1
32	AA00 1394	Decal - Toner Supply	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0450 3008B	Tapping Screw - M3x8	
102	0800 0072	Philips Pan Head Screw - M2.6x4	
103	0720 0040B	Retaining Ring - M4	
104	1105 0229	Clamp	
105	0451 4008B	Philips Tapping Screw - M4x8	
106	0451 3008B	Tapping Screw - M3x8	
107	0805 0072	CS Ring	

33.Toner Hopper Section (A229)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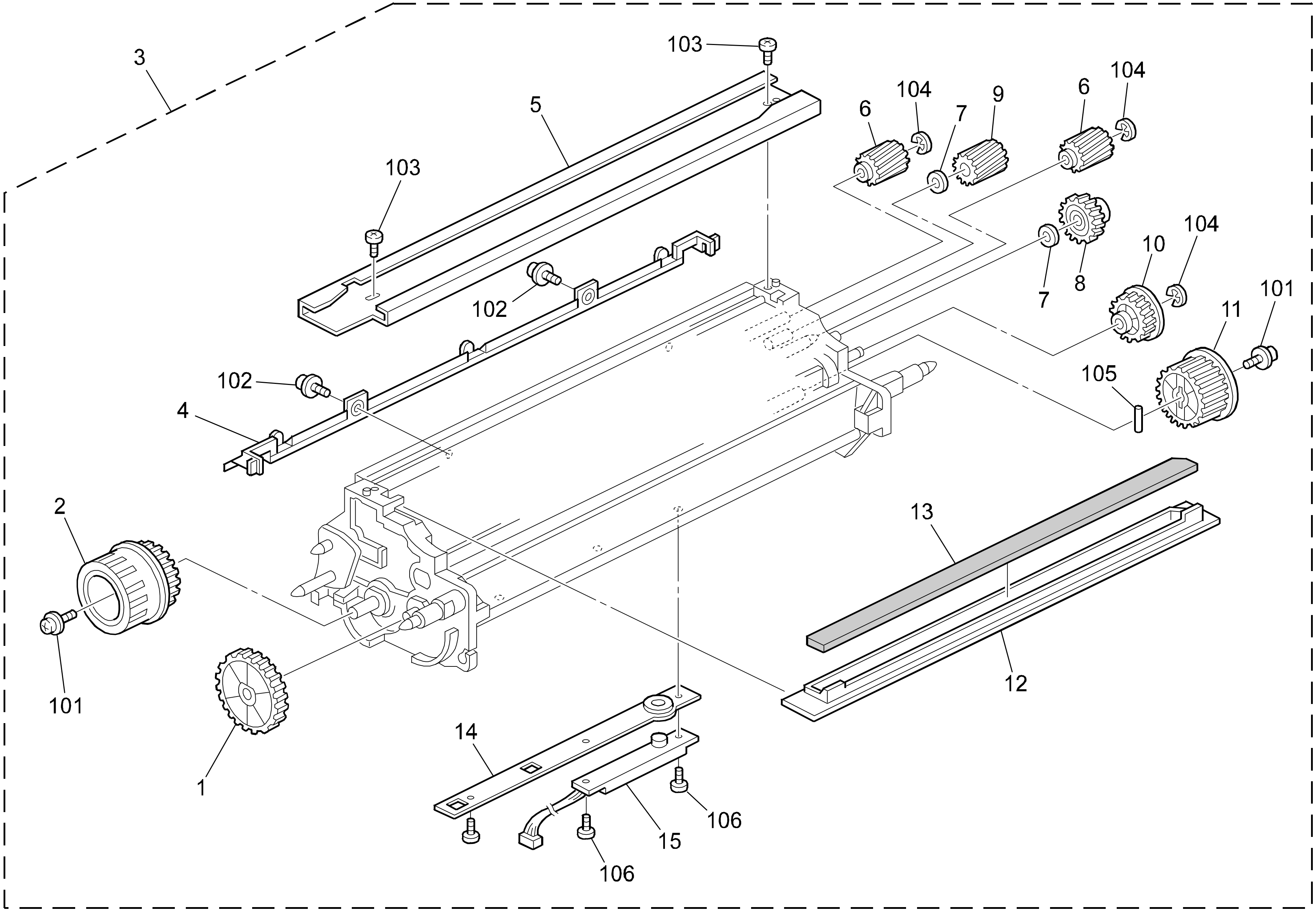
33.Toner Hopper Section (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 3150	Toner Supply Unit	1
2	A229 3183	Filter Middle Holder	1
3	**AA01 2104**	**Air Filter - Large**	**1**
4	A096 3176	Bushing - 6x12x8.5	1
5	AB01 3749	Gear - 15Z	1
6	AB01 3747	Gear - 16Z	1
7	A096 3175	Bushing 8x14x8	1
8	AA06 0291	Spring	1
9	AB01 3748	Joint Gear - 15Z	1
10	AA15 1794	Seal - 3x5x322	1
11	AA15 1792	Seal - 3x15x85	2
12	AA15 1793	Seal - 3x35x211	1
13	A096 3182	Plate Nut	1
14	A096 3181	Slitter	1
15	A229 3190	Stand	1
16	**AA01 2105**	**Air Dust Filter - Small**	**1**
17	A229 3184	Filter Front Holder	1
18	AW31 0003	Toner End Sensor	1
19	A229 3152	Upper Case	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 4006B	Tapping Screw - 4x6	
102	0720 0040B	Retaining Ring - M4	
103	0727 0060B	Retaining Ring C - 6	
104	0452 4010B	Tapping Bind Screw - M4x10	
105	0452 3008W	Binding Self Tapping Screw - M3 X 8	
106	0720 0060B	Retaining Ring - M6	

34.Development Unit 1 (A229)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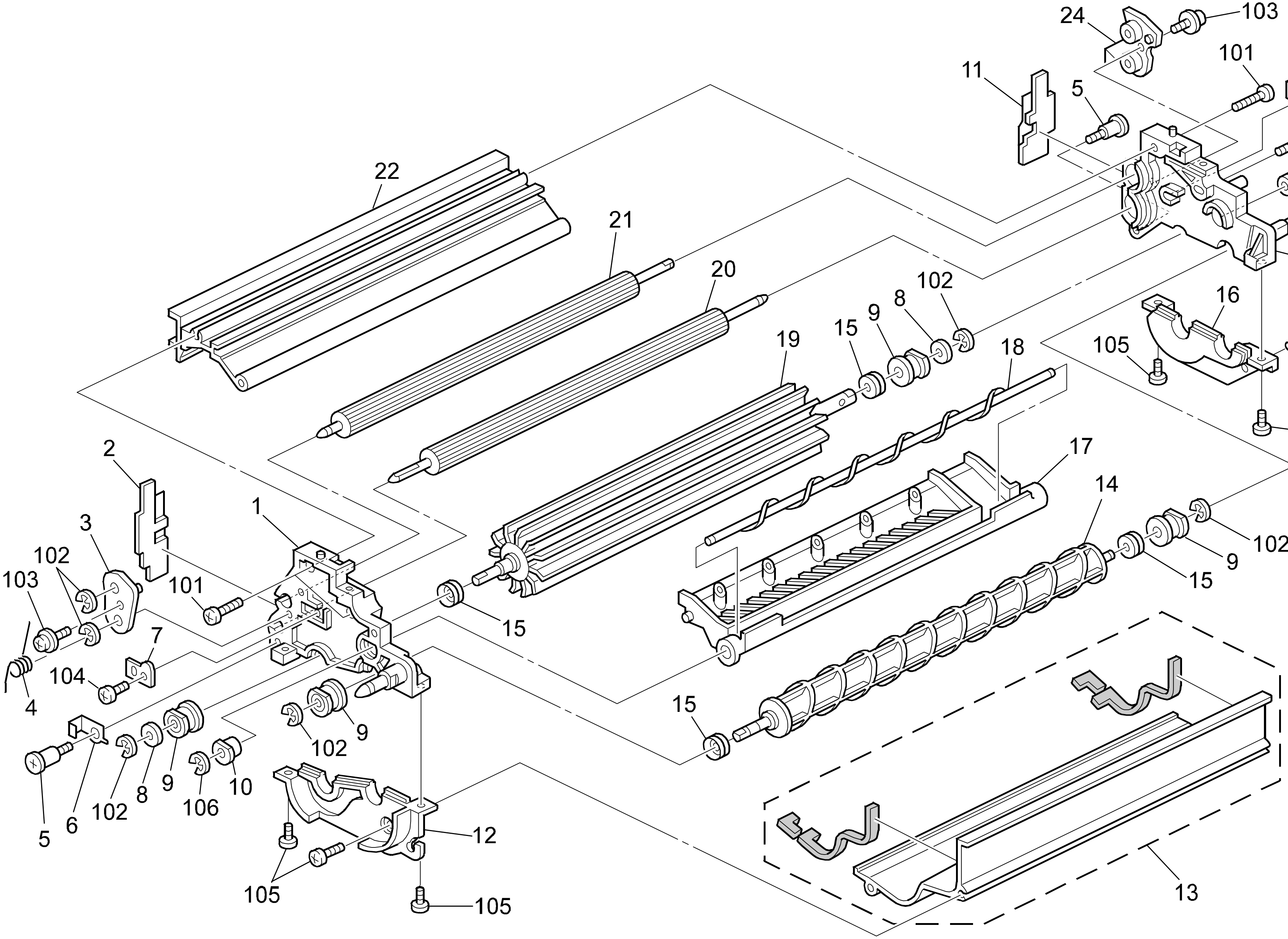
34.Development Unit 1 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	AB01 3785	Gear - 43Z	1
2	A096 3069	Development Knob	1
3	A229 3050	Development Unit	1
4	A096 3103	Entrance Seal	1
5	A096 3104	Development Guide R	1
6	AB01 3791	Gear - 17Z	2
7	AA13 2025	Spacer - 1x8x12	2
8	AB01 3788	Gear - 23Z	1
9	AB01 3786	Gear - 18Z	1
10	AB01 3790	Gear - 25Z	1
11	AB01 3783	Gear - 34Z	1
12	A096 3141	Development Filter Case	1
13	**AA01 2060**	**Development Filter**	**1**
14	A096 3059	Toner Sensor Guide	1
15	AW23 0006	Toner Density Sensor	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0951 3006B	Philips Screw With Flat Washer - M3x6	
102	0951 4008B	Philips Screw With Washer - M4x8	
103	0314 0060B	Philips Pan Head Screw - M4x6	
104	0720 0040B	Retaining Ring - M4	
105	0622 5160E	Spring Pin - 2.5x16	
106	0313 0050B	Philips Pan Head Screw - M3x5	

35.Development Unit 2 (A229)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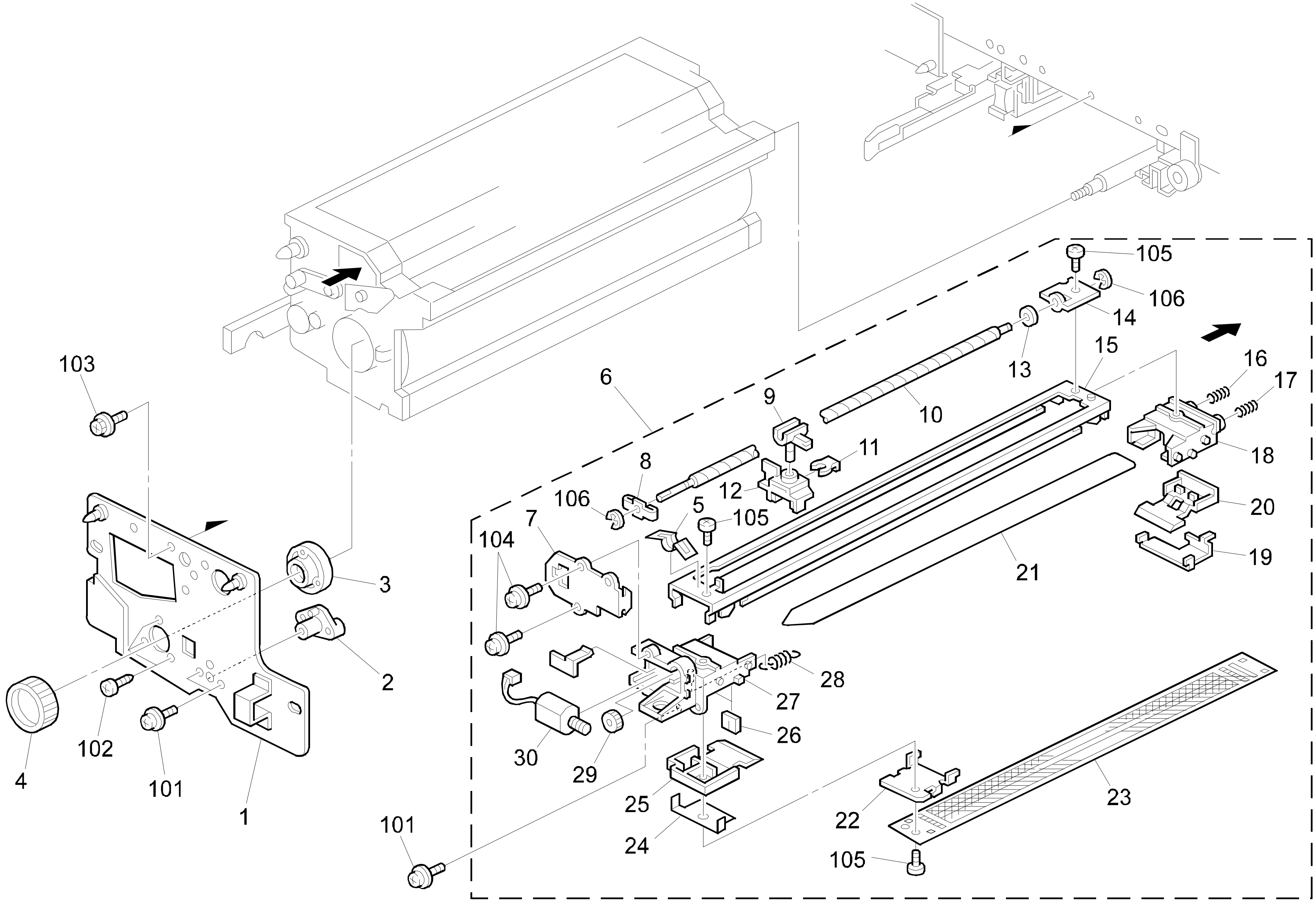
35.Development Unit 2 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A096 3081	Front Upper Side Plate	1
2	AA15 2226	Front Drum Seal	1
3	A096 3125	Adjusting Plate	1
4	AA06 6296	Torsion Spring	1
5	AA14 3426	Stopped Screw - M4x17	2
6	A229 3051	Electrode	1
7	A096 3106	Positioning Plate	2
8	AA13 2024	Spacer - M6	2
9	AA08 0150	Bushing - 6x16x12.8	4
10	AA08 0152	Bushing - 4x12x13	2
11	AA15 2227	Rear Drum Seal	1
12	A096 3056	Lower Front Side Plate	1
13	A096 3052	Lower Development Casing	1
14	AD03 8053	Mixing Paddle Roller	1
15	AA15 2142	Seal - 11x7x3.8mm	4
16	A096 3057	Lower Rear Side Plate	1
17	AD03 6047	Back Spill Plate	1
18	AD03 7035	Mixing Auger	1
19	AD03 8072	Paddle Roller	1
20	AD03 1248	Lower Development Roller	1
21	AD03 1297	Upper Development Roller	1
22	A229 3081	Upper Development Case	1
23	A096 3084	Rear Upper Side Plate	1
24	A096 3128	Bearing Case	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0314 0140B	Philips Pan Head Screw - M4x14	
102	0720 0040B	Retaining Ring - M4	
103	0951 3006B	Philips Screw With Flat Washer - M3x6	
104	0314 0060B	Philips Pan Head Screw - M4x6	
105	0314 0080B	Philips Pan Head Screw - M4x8	
106	0720 0030B	Retaining Ring - M3	

36.PCU 1 (A229)

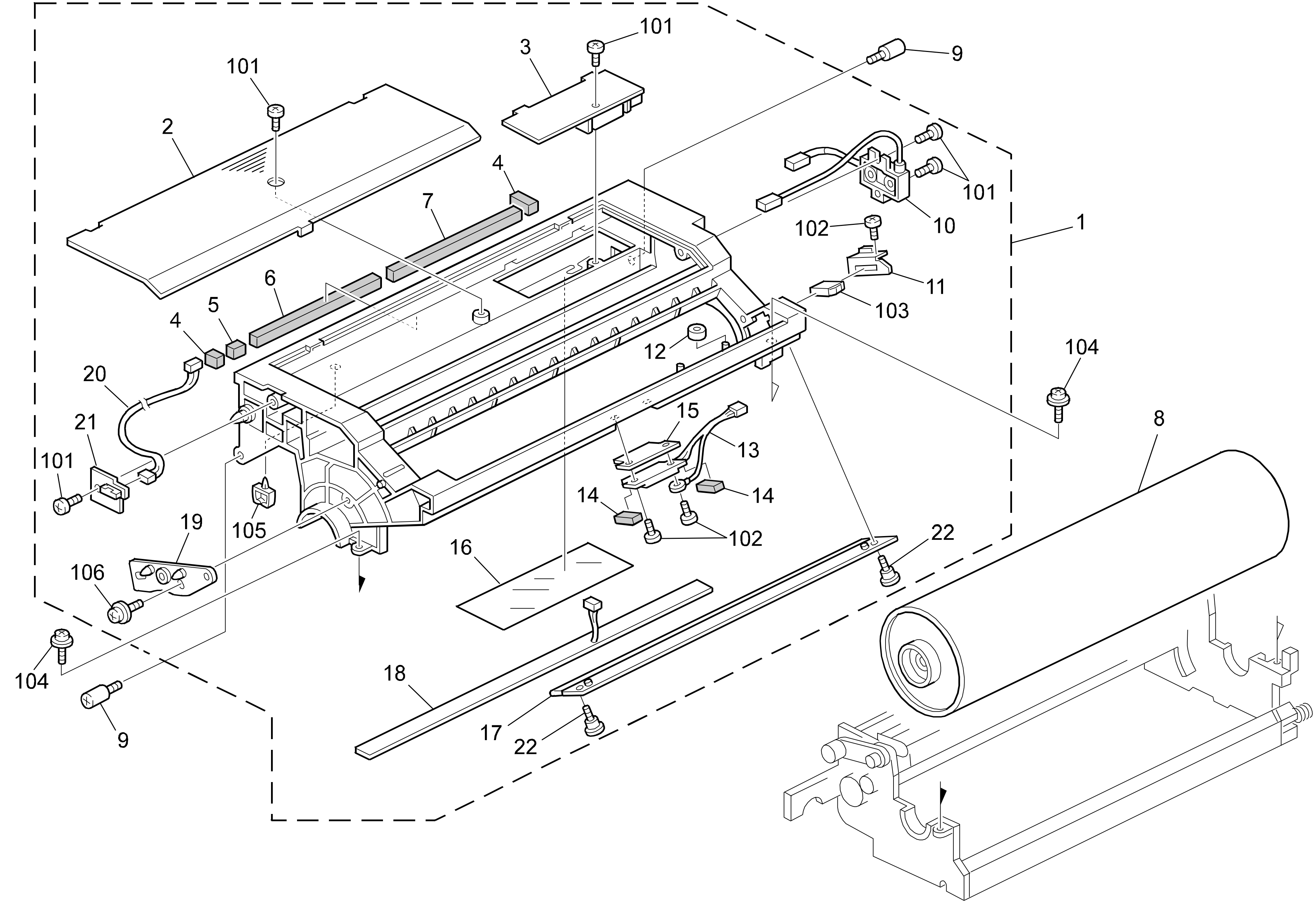


36.PCU 1 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A096 2321	Drum Stay Ass'y	1
2	A053 2135	Development Unit Holder	1
3	A096 2325	Drum Stay Sleeve	1
4	A096 2330	Drum Shaft Knob	1
5	A176 2054	Grounding Plate	1
6	AD00 4091	Charge Corona Unit	1
7	A096 2053	Cleaner Motor Cover	1
8	AA08 0147	Front Bushing	1
9	A096 2062	Wire Cleaner Slider	1
10	A176 2061	Screw Shaft	1
11	A096 2065	Slider Ring	1
12	**A096 2063**	**Corona Wire Cleaner**	**1**
13	AA16 1105	Cleaner Cushion	1
14	AA08 0148	Rear Bushing	1
15	AD02 3106	Charge Corona Casing	1
16	AA06 3248	Charge Terminal Spring	1
17	AA06 3249	Grid Terminal Spring	1
18	AD02 2285	Rear End Block	1
19	A096 2051	Rear Grid Anchor	1
20	AD02 2307	Cover - Rear End Block	1
21	**AD02 0053**	**Charge Corona Wire**	**1**
22	A096 2052	Front Grid Anchor	1
23	**A096 2057**	**Charge Corona Grid**	**1**
24	A134 2363	Terminal Plate	1
25	AD02 2306	Cover - Front End Block	1
26	AA16 1119	Cushion - Wire	2
27	AD02 2283	Front End Block	1
28	AA06 2284	Pressure Spring	1
29	AB01 0087	Gear - 20Z	1
30	AX04 0061	Cleaner Motor - DC 0.5W	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 4006B	Tapping Screw - 4x6	
102	0450 3006B	Tapping Screw - M3x6	
103	0451 4008B	Philips Tapping Screw - M4x8	
104	0965 3008B	Tapping Screw With Washer - M3x8	
105	0971 4006A	Philips Polycarbonate Screw - M4x6	
106	0720 0025B	Retaining Ring - M2.5	

37.PCU 2 (A229)

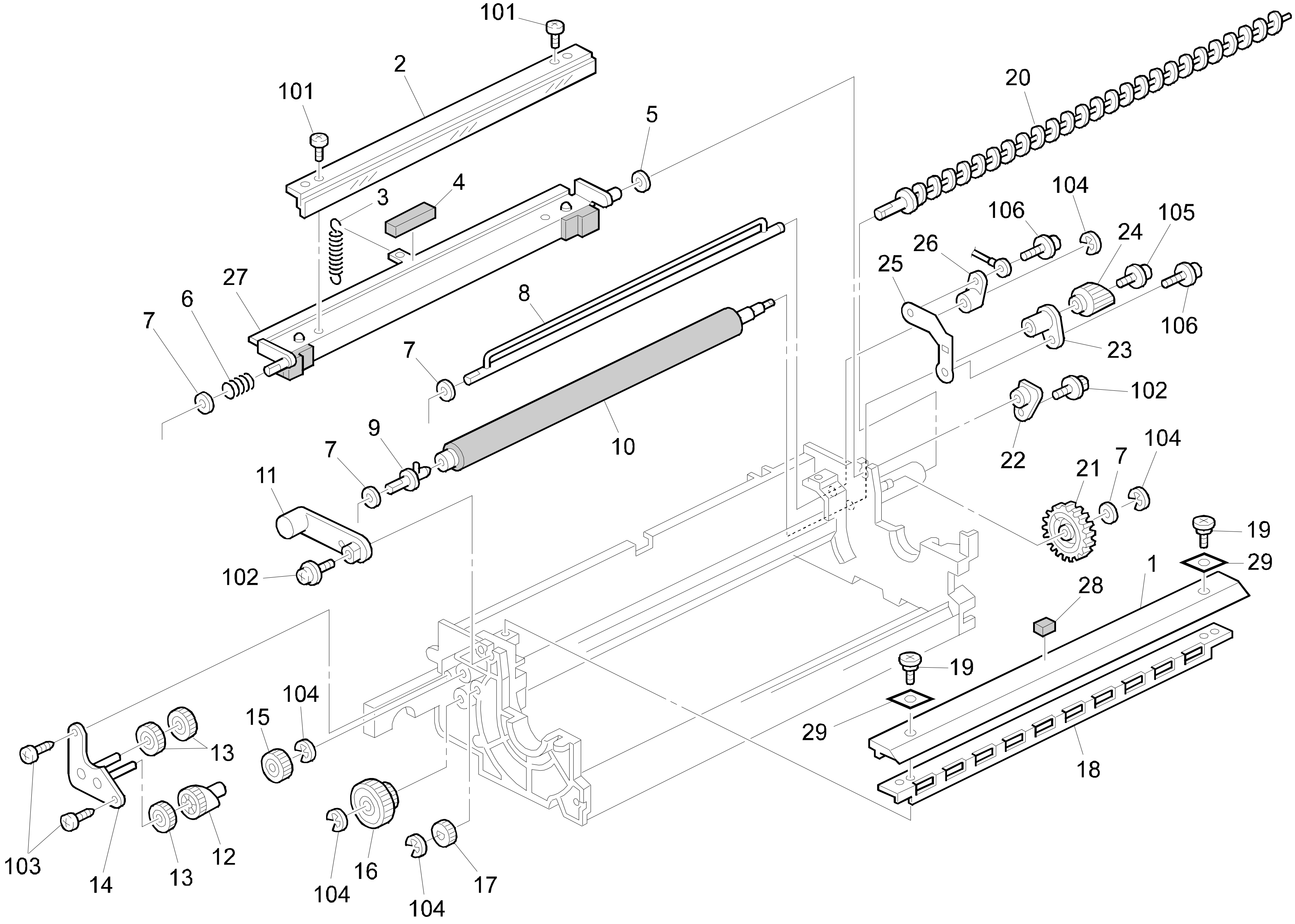


37.PCU 2 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 2380	Upper Drum Unit	1
2	A176 2260	Upper Unit Cover	1
3	AZ32 0087	Power Pack	1
4	AA15 1925	Cleaning Seal 1	2
5	AA15 1926	Cleaning Seal 2	1
6	AA15 1927	Cleaning Seal 3	1
7	AA15 1928	Cleaning Seal - 4	1
8	A229 9510	OPC Drum	1
9	5409 1855	Mounting Pin	2
10	AD02 1128	Charge Corona Receptacle	1
11	A229 2401	Connector Bracket	1
12	A153 3571	Collar	1
13	AW33 0003	Drum Potential Sensor	1
14	AA15 1780	Potential Sensor Shield	2
15	A096 2301	Grounding Plate	1
16	AA15 0350	Seal - 40x130	1
17	**A229 2426**	**Drum Entrance Seal**	**1**
18	A096 5320	Quenching Lamp	1
19	A096 2266	Corona Unit Bracket	1
20	A096 5442	Corona Cleaner Harness	1
21	A096 2281	Connector Bracket	1
22	5875 2088	Shoulder Screw - M4	2

Index No.	Part No.	Description	Q'ty Per Assembly
101	0452 3008B	Tapping Screw - M3x8	
102	0453 3006B	Tapping Screw - M3x6	
103	1102 6246	Relay Connector - 4P	
104	0951 4010W	Philips Screw With Flatwasher - M4x10	
105	1105 0229	Clamp	
106	0965 3008W	Tapping Screw With Flat Washer - M3x8	

38.PCU 3 (A229)

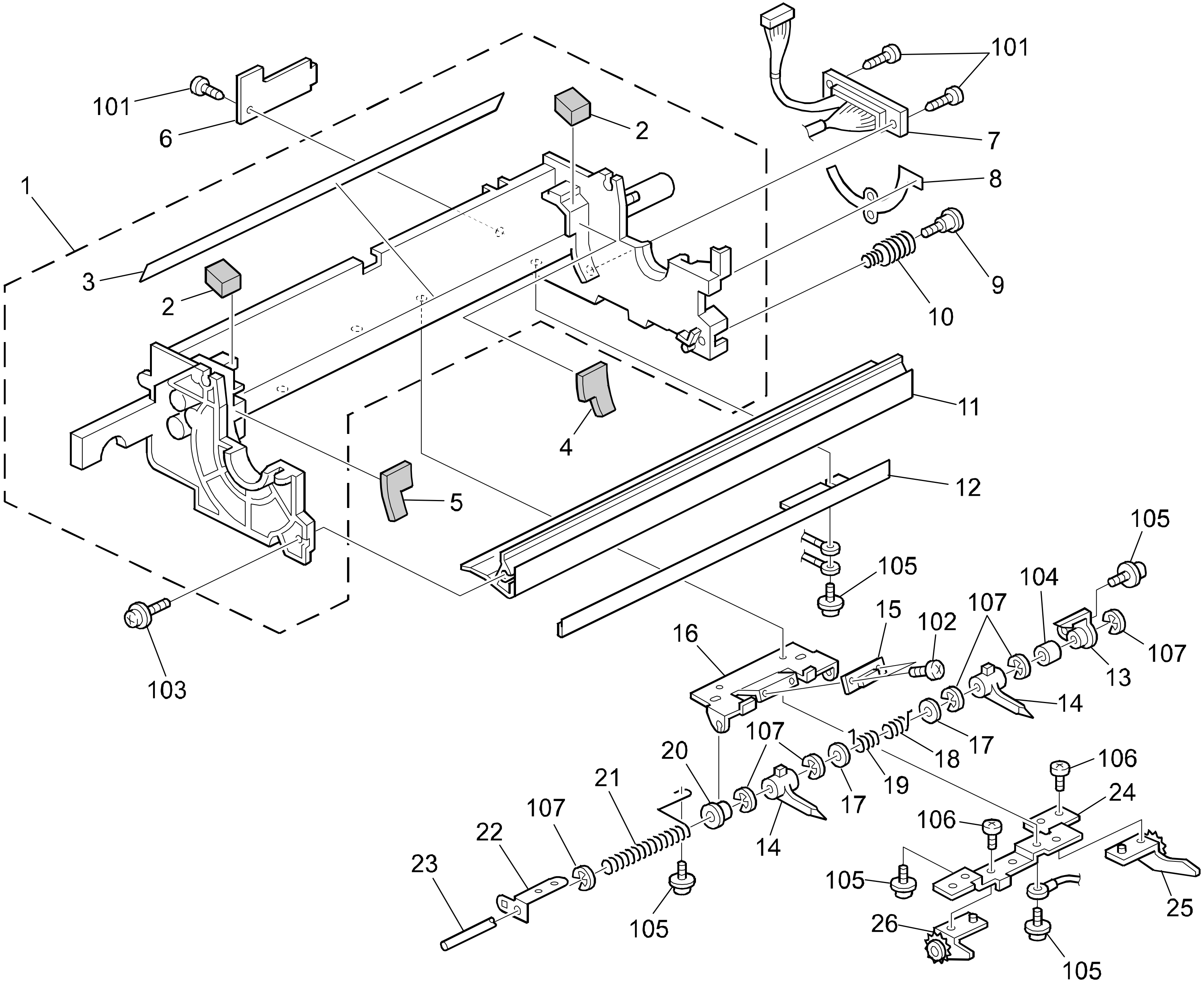


38.PCU 3 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A096 3631	Cleaning Seal	1
2	**AD04 1056**	**Cleaning Blade**	**1**
3	5853 1190	Spring - Click Plate	1
4	AA15 1926	Cleaning Seal 2	1
5	AA13 2025	Spacer - 1x8x12	1
6	AA06 3380	Spring - 16mm	1
7	AA13 2024	Spacer - M6	3
8	AD03 9057	Cleaning Agitator	1
9	A096 3586	Cleaning Brush Drive Shaft	1
10	**AD04 2038**	**Cleaning Brush**	**1**
11	A096 3575	Blade Release Lever	1
12	AB01 7288	Cam Gear - 35Z	1
13	A096 3661	Gear - 15/35Z	3
14	A096 3656	Gear Bracket	1
15	AB01 0340	Gear - 30Z	1
16	AB01 7296	Gear - 30/47Z	1
17	A096 3588	Gear - 19Z	1
18	A096 3607	Brush Roller Bracket	1
19	5894 2540	Arm Screw	2
20	AD04 3054	Toner Collection Coil	1
21	AB01 7323	Cam Gear - 35z	1
22	AA08 0154	Rear Bushing	1
23	AA08 2045	Cleaning Brush Bushing	1
24	A096 3594	Joint Gear - 14z	1
25	A176 3527	Grounding Plate	1
26	AA08 2059	Agitator Bushing	1
27	A229 2329	Cleaning Blade Bracket	1
28	AA15 1925	Cleaning Seal 1	1
29	A229 2371	Cleaning Seal Sheet	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0314 0060B	Philips Pan Head Screw - M4x6	
102	0951 3005B	Philips Screw With Flat Washer M3x5	
103	0452 3008B	Tapping Screw - M3x8	
104	0720 0040B	Retaining Ring - M4	
105	0951 3006B	Philips Screw With Flat Washer - M3x6	
106	0951 3008B	Philips Screw With Flat Washer - M3x8	

39.PCU 4 (A229)

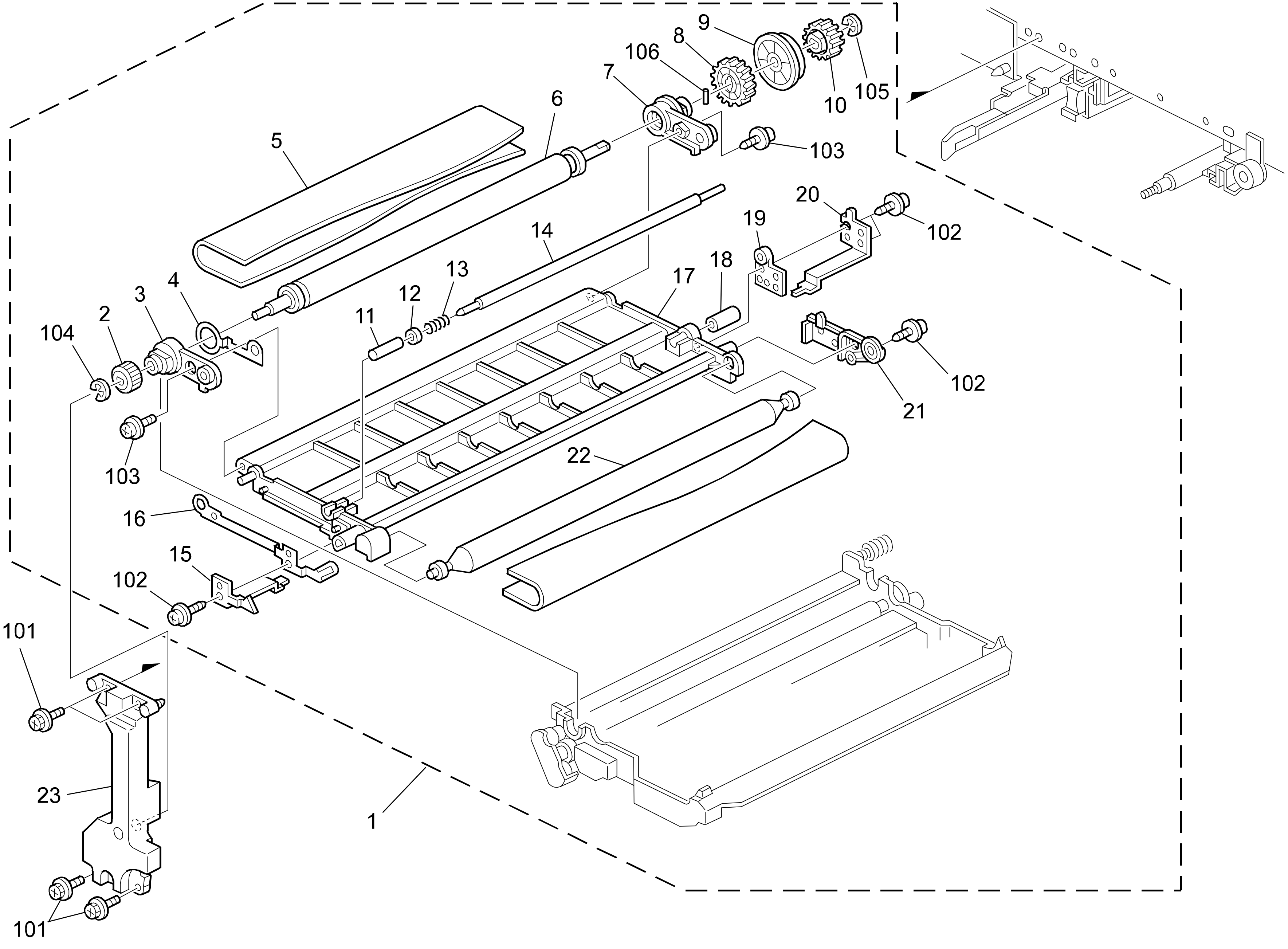


39.PCU 4 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 2321	Lower Frame	1
2	AA15 1811	Inner Casing Seal	2
3	AA15 0344	Mylar Seal - 11x350	1
4	A134 2392	Rear Drum Seal	1
5	AA15 2264	Front Drum Seal	1
6	A096 3666	Harness Cover	1
7	A229 5411	Drum Unit Harness	1
8	A229 2352	Grounding Plate	1
9	AA14 3432	Stepped Screw - M3	1
10	AA06 3576	Spring	1
11	A229 3596	Upper Entrance Stay	1
12	A096 3621	Entrance Seal	1
13	AA08 0155	Rear Pawl Bushing	1
14	AD02 5018	Pick-off Pawl	2
15	A134 5251	ID Sensor	1
16	A096 3642	Pick-off Pawl Bracket	1
17	A352 2138	Slide Collar - 0.6x4.5x6	2
18	AA06 6215	Rear Pawl Spring	1
19	AA06 6214	Front Pawl Spring	1
20	5324 1658	Bushing- 4x8x4.5mm	1
21	AA06 3384	Pick-off Pawl Shaft Spring	1
22	A096 3624	Drum Grounding Plate	1
23	A096 3646	Pick-off Pawl Shaft	1
24	A097 3644	Transport Guide Bracket	1
25	A048 2277	Rear Transport Guide	1
26	A048 2274	Front Transport Guide	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0452 3010B	Tapping Bind Screw - M3x10	
102	0313 0050B	Philips Pan Head Screw - M3x5	
103	0951 3008B	Philips Screw With Flat Washer - M3x8	
104	0807 3092	Spacer - 4x5x3	
105	0951 3006B	Philips Screw With Flat Washer - M3x6	
106	0452 3006B	Tapping Screw - M3x6	
107	0720 0030B	Retaining Ring - M3	

40.Transfer Belt Unit 1 (A229)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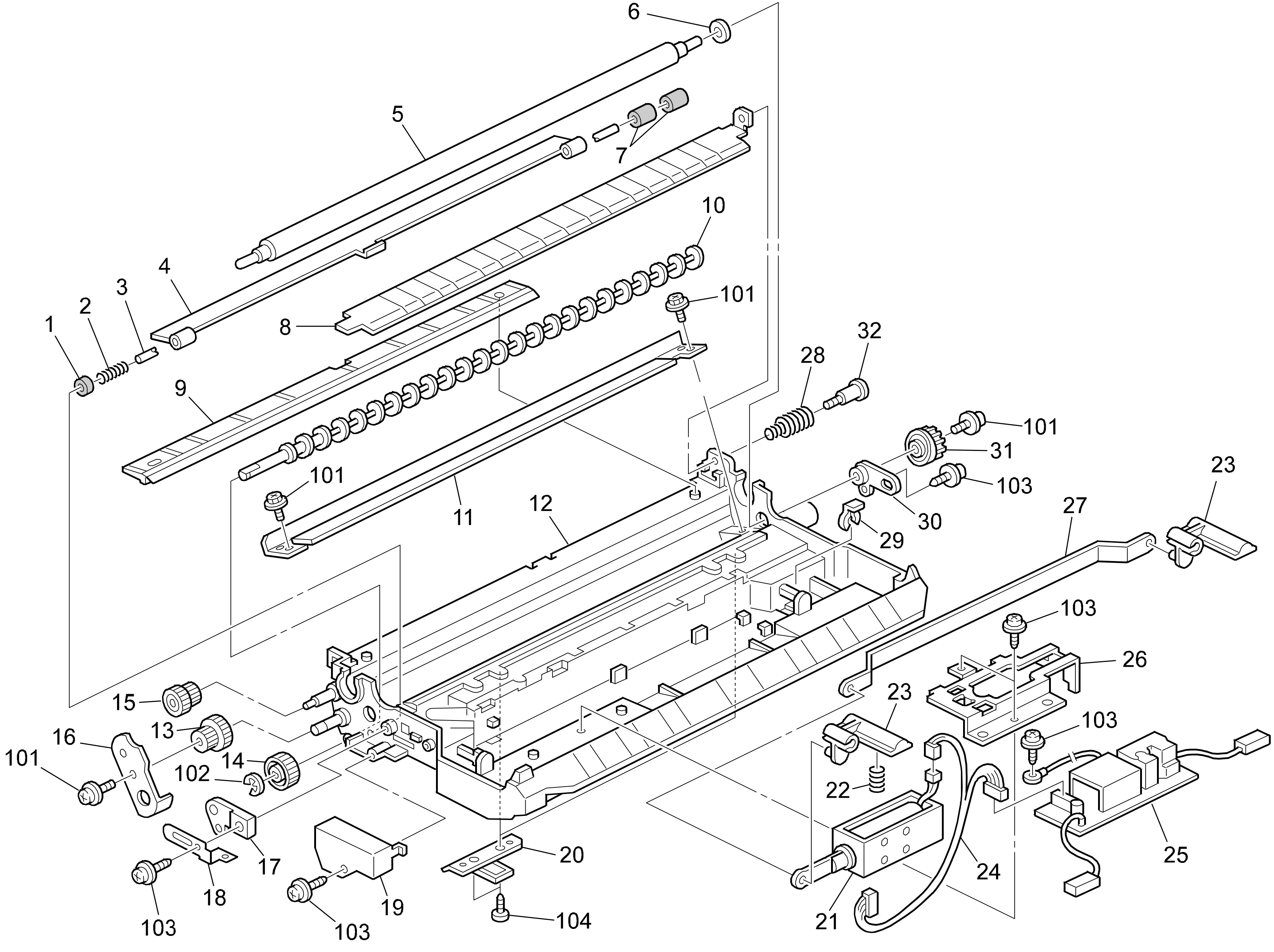
40.Transfer Belt Unit 1 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 3810	Transfer Unit Ass'y	1
2	AB01 0333	Gear - 26Z	1
3	A229 3861	Front Arm	1
4	A229 3875	Drive Electrode	1
5	**A229 3852**	**Transfer Belt**	**1**
6	A229 3880	Drive Roller	1
7	A229 3862	Rear Arm	1
8	AB01 4104	Cleaning Roller Gear	1
9	AA08 0157	Bushing - 8x32x9	1
10	AB01 3807	Gear - 20Z	1
11	A096 3867	Front Bushing - 4.5x6x21	1
12	A176 3863	Spacer - 4x6x2	1
13	AA06 3531	Pressure Spring - 12mm	1
14	A096 3870	Transfer Bias Roller	1
15	A229 3859	Front Spring Plate	1
16	A229 3876	Driven Electrode	1
17	A229 3853	Transfer Belt Frame	1
18	A096 3868	Rear Bushing - 4.5x6x13.5	1
19	A096 3864	Transfer Belt Terminal	1
20	A096 3860	Rear Spring Plate	1
21	A096 3865	Terminal Cover	1
22	A229 3865	Transport Driven Roller	1
23	A096 3966	Belt Unit Support Plate	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 4008B	Philips Tapping Screw - M4x8	
102	0452 3008B	Tapping Screw - M3x8	
103	0951 3008B	Philips Screw With Flat Washer - M3x8	
104	0720 0040E	Retaining Ring - M4	
105	0720 0060E	Retaining Ring - M6	
106	0633 0140G	Parallel Pin - 3x14	

41.Transfer Belt Unit 2 (A229)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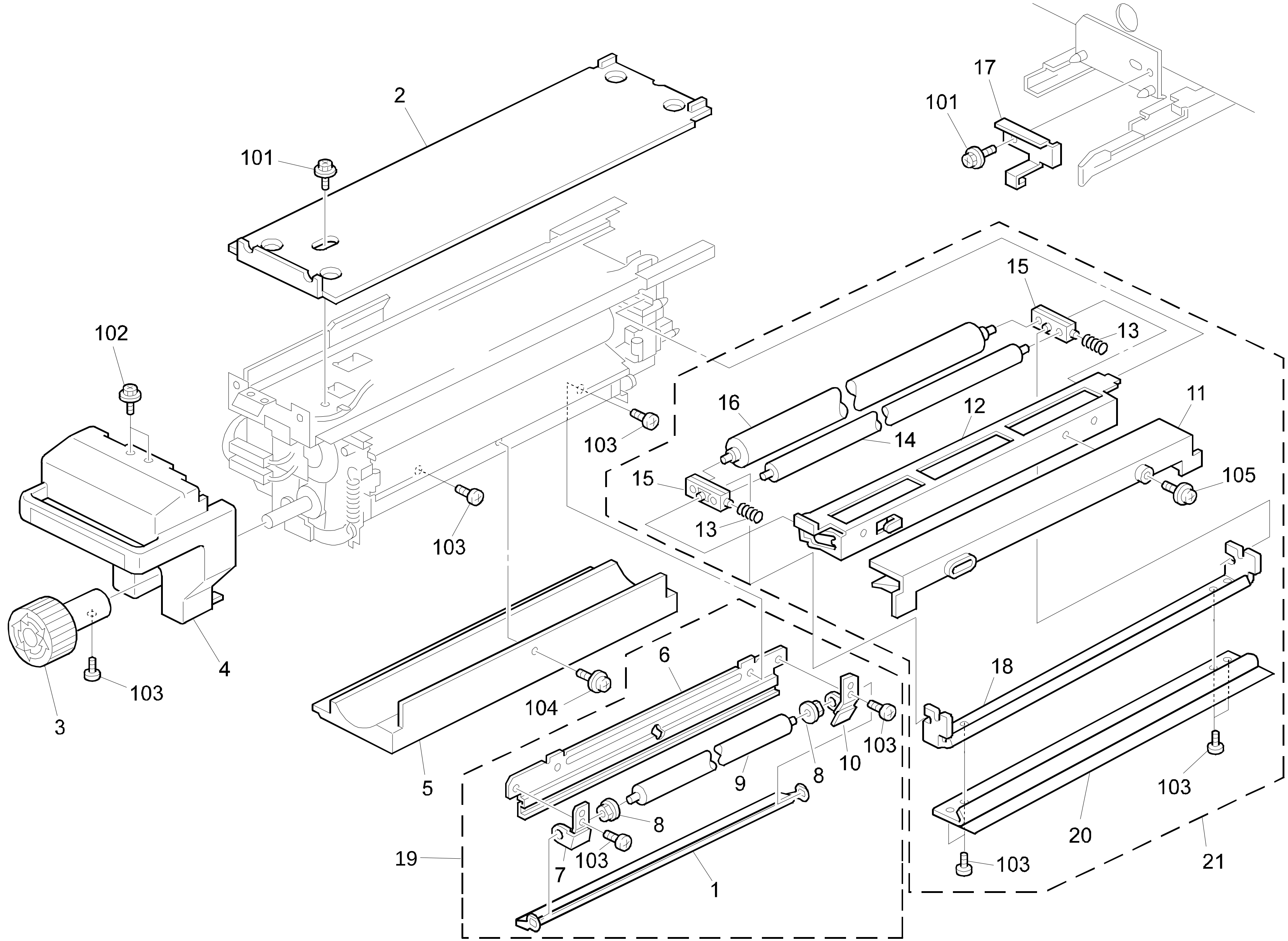
41.Transfer Belt Unit 2 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 3915	Front Agitator Shield	1
2	AA06 3309	Compression Spring	1
3	A229 3914	Agitator Shaft	1
4	A229 3913	Agitator	1
5	AD04 0030	Cleaning Roller - Transfer Belt	1
6	AA13 2024	Spacer - M6	1
7	A229 3918	Rear Agitator Shield	2
8	A229 3933	Transfer Belt Guide Plate	1
9	A229 3930	Entrance Seal Holder	1
10	AD04 3056	Toner Collection Coil - Cleaning	1
11	**AD04 1049**	**Transfer Belt Cleaning Blade**	**1**
12	A229 3924	Transfer Belt Casing	1
13	AB01 0336	Gear - 22/36Z	1
14	AB01 0334	Gear - 34Z	1
15	AB01 0335	Gear - 22/48Z	1
16	A096 3929	Gear Cover	1
17	A229 3910	Front Bushing	1
18	A229 3912	Bias Terminal	1
19	A229 3917	Electrode Cover	1
20	A096 3907	Spring Plate	1
21	A229 3935	DC Solenoid	1
22	AA06 3485	Compression Spring	1
23	A096 3915	Transfer Belt Lever	2
24	A229 5410	Transfer Unit Harness	1
25	AZ32 0088	Power Pack	1
26	A096 3922	Soleniod Bracket	1
27	A096 3916	Belt Lever Arm	1
28	AA06 3310	Guide Plate Spring	1
29	5447 2681	Snap Ring	1
30	A229 3911	Rear Bushing	1
31	AB01 4093	Cleaning Roller Gear	1
32	H053 1150	Stepped Screw - Locking	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0951 3006B	Philips Screw With Flat Washer - M3x6	
102	0720 0040E	Retaining Ring - M4	
103	0450 3008B	Tapping Screw - M3x8	
104	0452 3006B	Tapping Screw - M3x6	

42.Fusing Unit 1 (A229)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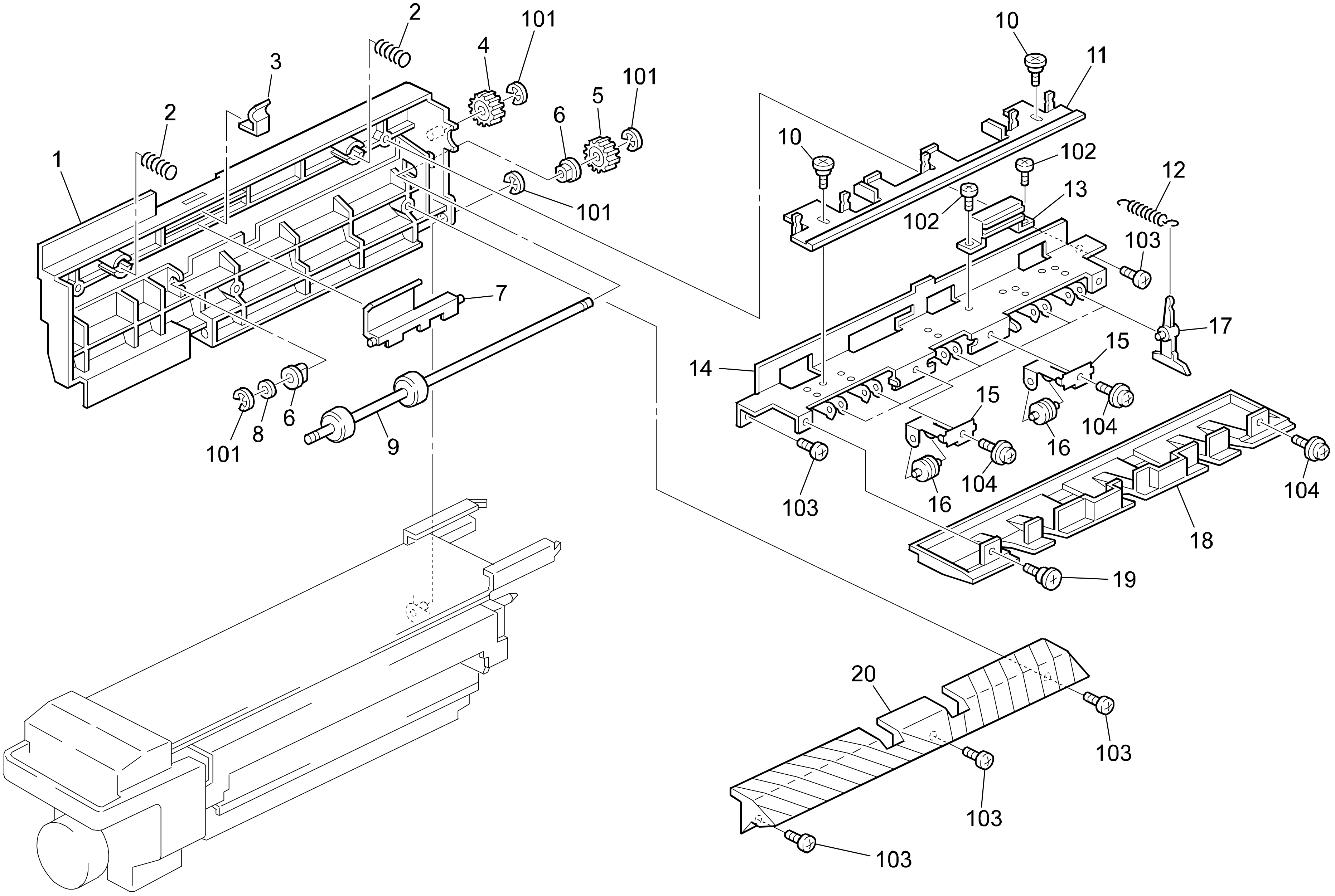
42.Fusing Unit 1 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
*	A229 4020	Fusing Unit Ass'y - 120V	1
*	A229 4025	Fusing Unit Ass'y - 230V	1
1	**A229 4153**	**Cleaning Roller Holder (230V)**	**1**
2	A247 4155	Rail Cover	1
3	AG05 0076	Fusing Knob	1
4	A096 4150	Fusing Cover	1
5	A096 4161	Lower Fusing Cover	1
6	A097 4122	Cleaning Roller Bracket	1
7	A097 4129	Right Holder	1
8	**AE03 1024**	**Bushing - M4x7**	**2**
9	**AE04 2023**	**Pressure Roller Clea[illegible]g Roller**	**1**
10	A097 4126	Left Holder	1
11	A176 4131	Upper Entrance Guid[illegible]	1
12	A176 4141	Oil Supply Roller Bra[illegible]t	1
13	AA06 3294	Pressure Spring	2
14	**AE04 2020**	**Oil Supply Cleaning [illegible]ller**	**1**
15	AE03 1025	Bushing - Oil Supply Roller	2
16	**AE04 0023**	**Oil Supply Roller**	**1**
17	A096 4273	Fusing Unit Stopper	1
18	A229 4144	Cleaning Roller Brack[illegible]	1
19	**A229 4090**	**Lower Cleaning Roller Unit (115V)**	**1**
19	A229 4095	Lower Cleaning Roller Unit (230V)	1
20	A229 4146	Cleaning Blade Suppo[illegible]late	1
21	A229 4082	Oil Supply Unit	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 4008B	Philips Tapping Screw - M4x8	
102	0453 4008Z	Tapping Screw - M4x8	
103	0314 0060B	Philips Pan Head Screw - M4x6	
104	0951 4006W	Philips Screw With Flat Washer - M4x6	
105	0951 4008W	Philips Screw With Flat Washer - M4x8	

43.Fusing Unit 2 (A229)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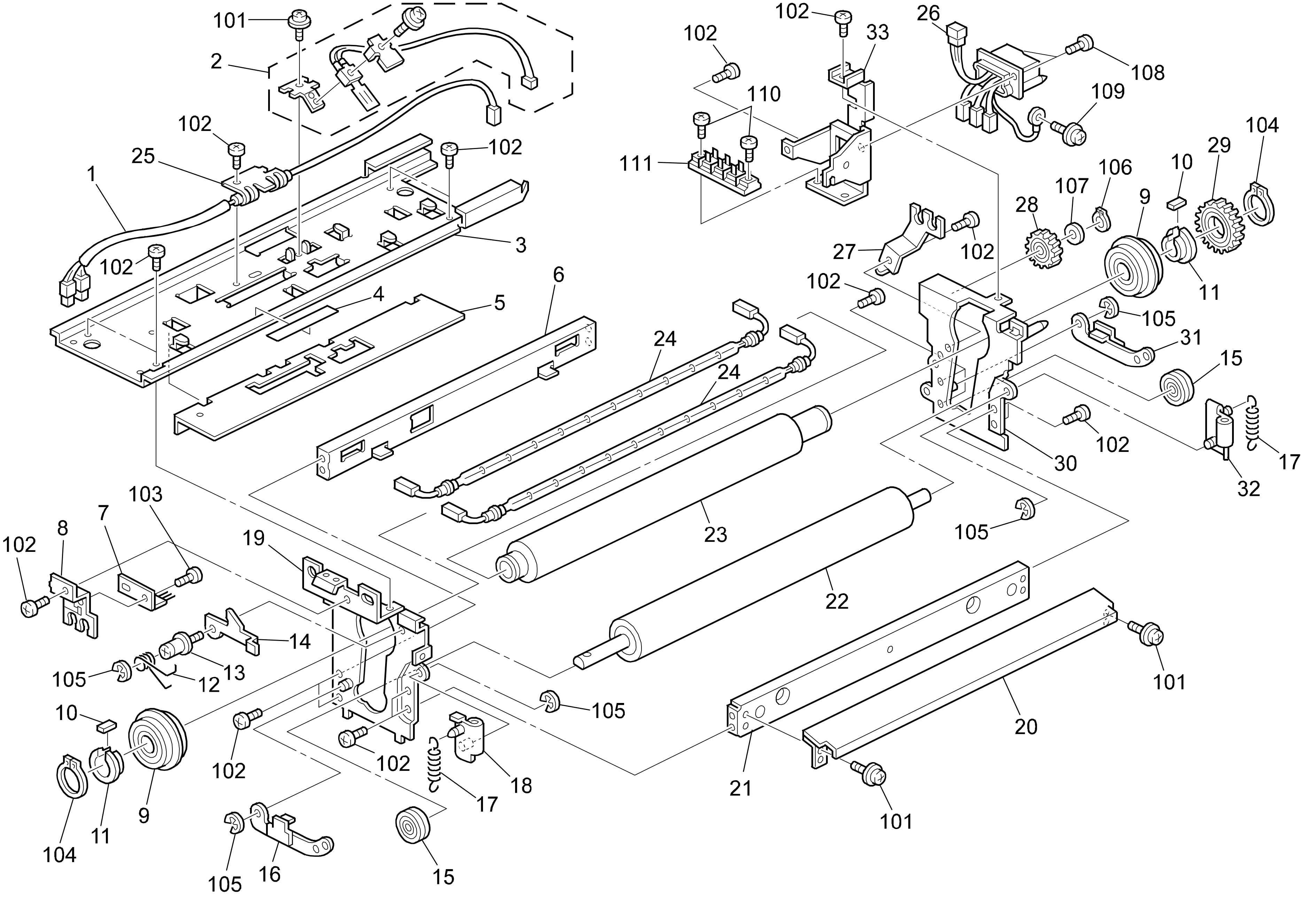
43.Fusing Unit 2 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 4301	Fusing Exit Frame	1
2	G619 4028	Slider Pressure Spring	2
3	A096 4304	Grip Spring Plate	1
4	AB01 3793	Gear - 19Z	1
5	AB01 3794	Gear - Fusing Exit	1
6	AA08 0184	Bushing - Fusing Exit	2
7	A096 4303	Fusing Exit Grip	1
8	AA13 2024	Spacer - M6	1
9	AF02 0302	Lower Fusing Exit Roller	1
10	5506 6111	Stepped Screw - M4	2
11	A096 4316	Stripper Release Slider	1
12	AA06 0539	Stripper Pawl Spring	5
13	AA02 1026	Magnet Catch	1
14	A096 4313	Stripper Stay	1
15	A096 4319	Exit Roller Holder	2
16	AF04 0561	Fusing Exit Roller - Upper	2
17	**A096 9500**	**Hot Roller Stripper - 5pcs/set**	**1**
18	A096 4322	Upper Fusing Exit Guide	1
19	AA14 3037	Development Cover Screw	1
20	A096 4309	Lower Fusing Exit Guide	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0720 0040B	Retaining Ring - M4	
102	0314 0060B	Philips Pan Head Screw - M4x6	
103	0414 0082W	Tapping Screw With Flat Washer - M4x8	
104	0951 4006W	Philips Screw With Flat Washer - M4x6	

44.Fusing Unit 3 (A229)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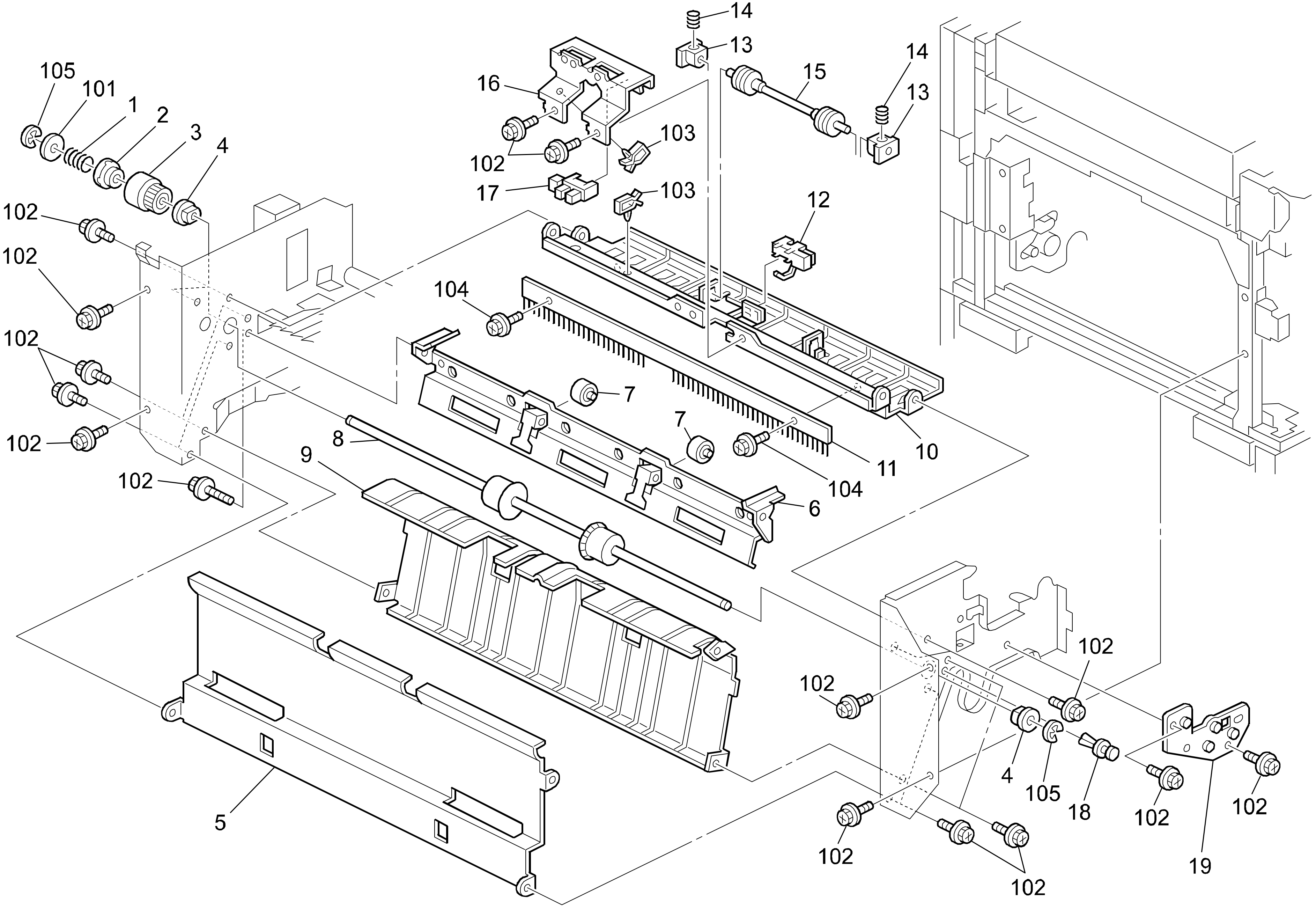
44.Fusing Unit 3 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A097 4227	Thermofuse - 169°C 16.7A	1
2	A229 4131	Thermistor	1
3	A096 4121	Fusing Unit Rail	1
4	5216 4145	Thermofuse Decal	1
5	AA17 2012	Heat Shielding Sheet	1
6	A096 4115	Fusing Left Stay	1
7	A413 1670	Antistatic Brush	1
8	A097 4170	Front Heater Holder	1
9	AE03 0017	Ball Bearing - 35x50x10	2
10	AA12 0088	Antistatic Spacer	2
11	AE03 2014	Bushing - 30x35x13.5	2
12	AA06 6232	Lock Lever Spring	1
13	5215 4444	Pin	1
14	A097 4133	Lock Lever	1
15	**AE03 0018**	**Ball Bearing - 12x28x8**	**2**
16	A096 4174	Front Pressure Lever	1
17	AA06 0739	Tension Spring	2
18	A096 4181	Front Release Bracket	1
19	A096 4101	Front Fusing Bracket	1
20	A229 4135	Lower Entrance Guide	1
21	A097 4112	Fusing Right Stay	1
22	**AE02 2078**	**Pressure Roller**	**1**
23	**AE01 1044**	**Hot Roller**	**1**
24	AX43 0034	Fusing Lamp - 550W 230V	2
24	AX44 0109	Fusing Lamp - 550W 115V	2
25	A096 4226	Thermofuse Bracket	1
26	A229 4141	Fusing Unit Harness - 115V	1
26	A229 4143	Development Harness - 230V	1
27	A097 4173	Rear Heater Holder	1
28	AB01 7357	Gear - 31Z	1
29	AB01 3792	Gear - 49Z	1
30	A176 4105	Rear Fusing Bracket	1
31	A096 4176	Rear Pressure Lever	1
32	A096 4185	Rear Release Bracket	1
33	A096 4231	Fusing Connector Bracket	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0951 4006W	Philips Screw With Flat Washer - M4x6	
102	0314 0060B	Philips Pan Head Screw - M4x6	
103	0313 0050B	Philips Pan Head Screw - M3x5	
104	0725 0300E	Retaining Ring C - M30	
105	0720 0040B	Retaining Ring - M4	
106	0807 5056	Washer - 8.1mm	
107	0727 0080G	Retaining Ring - M8	
108	0313 0080B	Philips Pan Head Screw - M3x8	
109	0314 0100B	Philips Pan Head Screw - M4x10	
110	0951 3005B	Philips Screw With Flat Washer M3x5	
111	1101 0473	Connector - 3P	

45.Paper Exit Unit 1 (A229)



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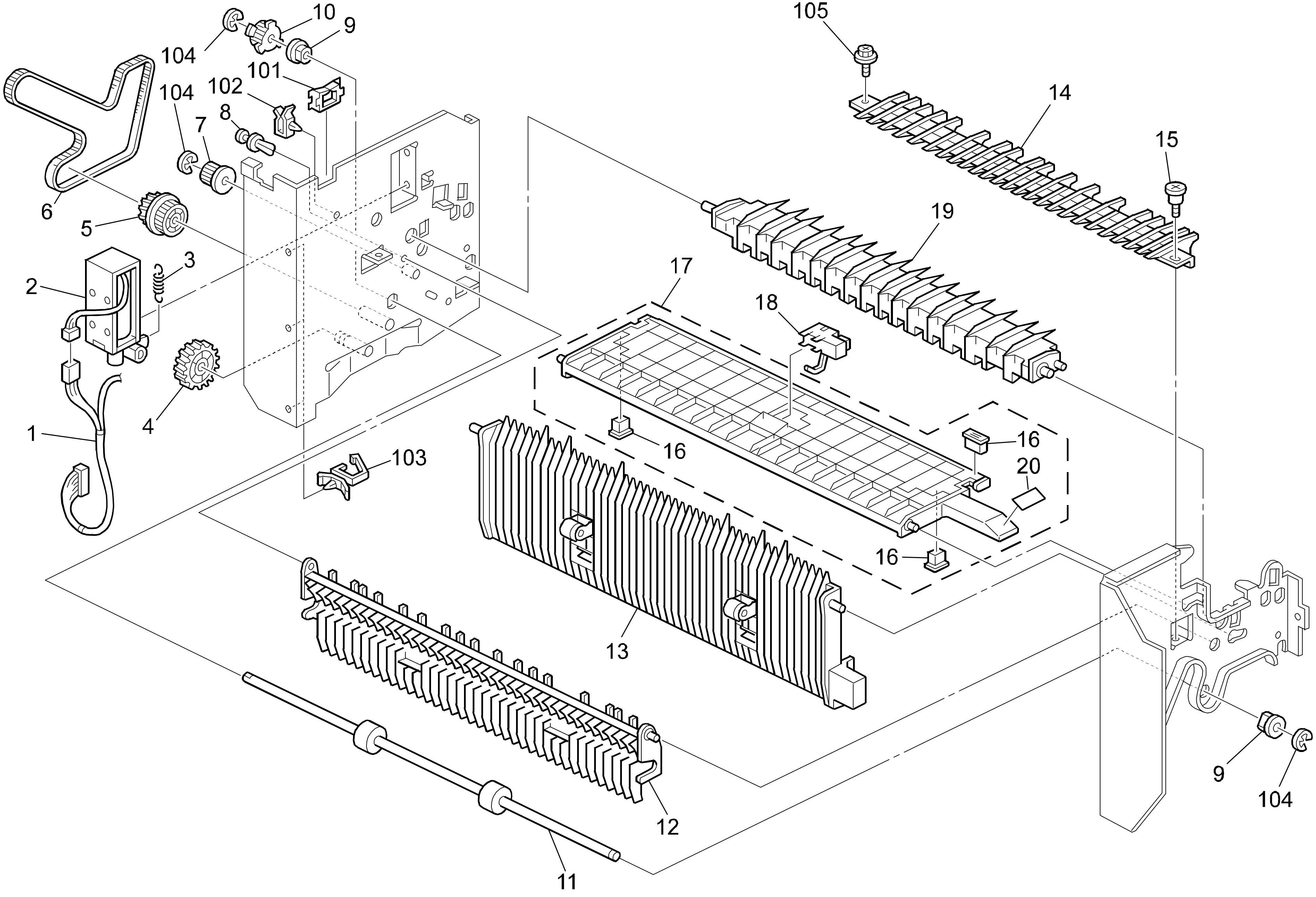
45.Paper Exit Unit 1 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A470 1704	Spring - Lower Exit Roller	1
2	A470 1703	Shift Clutch	1
3	AB03 0579	Timing Pulley - 27Z	1
4	AA08 2058	Bushing - 6x10x9mm	2
5	A229 4463	Exit Cover	1
6	A229 4460	Exit Roller Bracket	1
7	AF04 0031	Driven Roller	2
8	AF02 0430	Exit Drive Roller	1
9	A229 4456	Left Guide Plate	1
10	A229 4458	Exit Guide Plate	1
11	A229 4490	Discharge Brush	1
12	AW02 0106	Photointerruptor	1
13	AA08 0034	Bushing - 4x5x7	2
14	AA06 3577	Compression Spring	2
15	AF02 2104	Exit Roller - Driven	1
16	A229 4489	Sensor Bracket	1
17	AW02 0056	Photointerruptor - EE-SX4235A-P1	1
18	A048 2838	Nylon Rivet	1
19	A229 4484	Exit Drum Stay	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0807 4146	Flat Washer - 6.3x18x1	
102	0451 4008B	Philips Tapping Screw - M4x8	
103	1105 0267	Harness Clamp - YMC-10-0	
104	0451 3006B	Tapping Screw - M3x6	
105	0720 0040B	Retaining Ring - M4	

46.Paper Exit Unit 2 (A229)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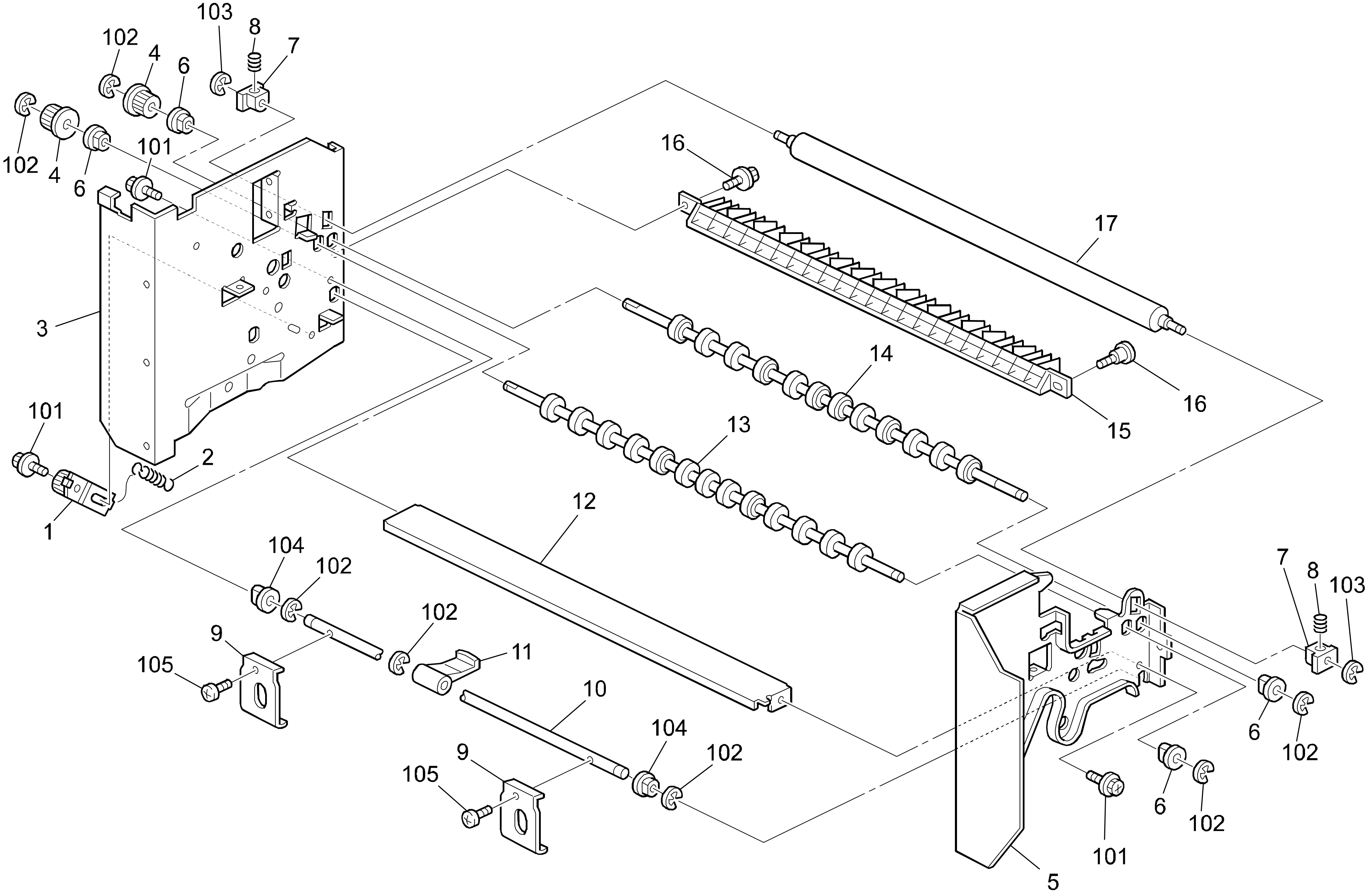
46.Paper Exit Unit 2 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 5436	Paper Exit Unit Harness	1
2	A229 4469	DC Solenoid	1
3	AA06 0717	Tension Spring	1
4	AB01 4075	Exit Gear - 29z	1
5	AB01 7465	Timing Pulley - 41Z 24Z	1
6	AA04 3270	Timing Belt - 40DS2M420G	1
7	AB03 0577	Timing Pulley - 20Z	1
8	A048 2838	Nylon Rivet	1
9	AA08 2058	Bushing - 6x10x9mm	2
10	AB03 0580	Timing Pulley - 27Z	1
11	AF02 0429	Drive Reverse Roller	1
12	A229 4483	Reverse Guide Plate	1
13	A229 4478	Right Invertor Guide	1
14	A229 4476	Middle Guide Plate	1
15	A077 4162	Shoulder Screw - M3	1
16	G012 1531	Magnet	3
17	A229 4472	Exit Upper Guide Plate	1
18	AW02 0106	Photointerruptor	1
19	A229 4475	Exit Gate Pawl	1
20	A229 4492	Decal - Exit Guide	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	1105 0113	Edge - P108	
102	1105 0283	Clamp	
103	1105 0260	Wire Saddle	
104	0720 0040B	Retaining Ring - M4	
105	0451 4008B	Philips Tapping Screw - M4X8	

47.Paper Exit Unit 3 (A229)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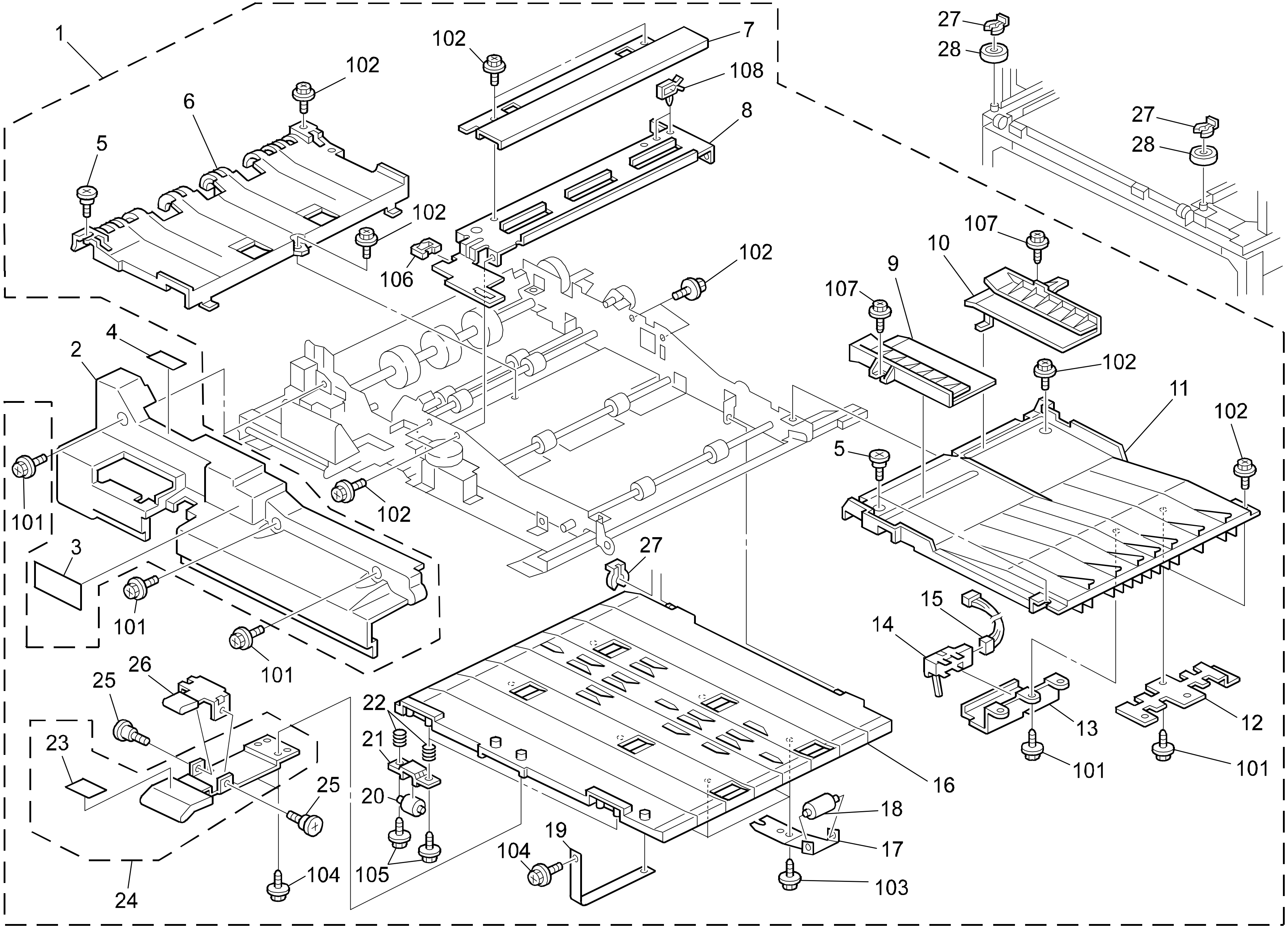
47.Paper Exit Unit 3 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 4487	Exit Tightener	1
2	AA06 0718	Tension Spring	1
3	A229 4451	Exit Rear Side Plate	1
4	AB03 0578	Timing Pulley - 18Z	2
5	A229 4453	Exit Front Side Plate	1
6	AA08 2058	Bushing - 6x10x9mm	4
7	AA08 0240	Bushing - Mm5	2
8	AA06 3578	Compression Spring	2
9	A229 4467	Pressure Arm	2
10	A229 4466	Pressure Shaft	1
11	A229 4468	Guide Plate Lever	1
12	A229 4464	Right Exit Stay	1
13	AF02 0428	Exit Decura Roller	1
14	AF02 0427	Entrance Decura Roller	1
15	A229 4474	Exit Lower Guide Plate	1
16	A077 4162	Shoulder Screw - M3	1
17	AF02 2103	Decura Driven Roller	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 4008B	Philips Tapping Screw - M4x8	
102	0720 0040B	Retaining Ring - M4	
103	0720 0030B	Retaining Ring - M3	
104	0805 3480	Bushing - 6mm	
105	0353 0060B	Philips Pan Head Sc[illegible]w - M3x6	

48.Inverter/Duplex Unit 1 (A229)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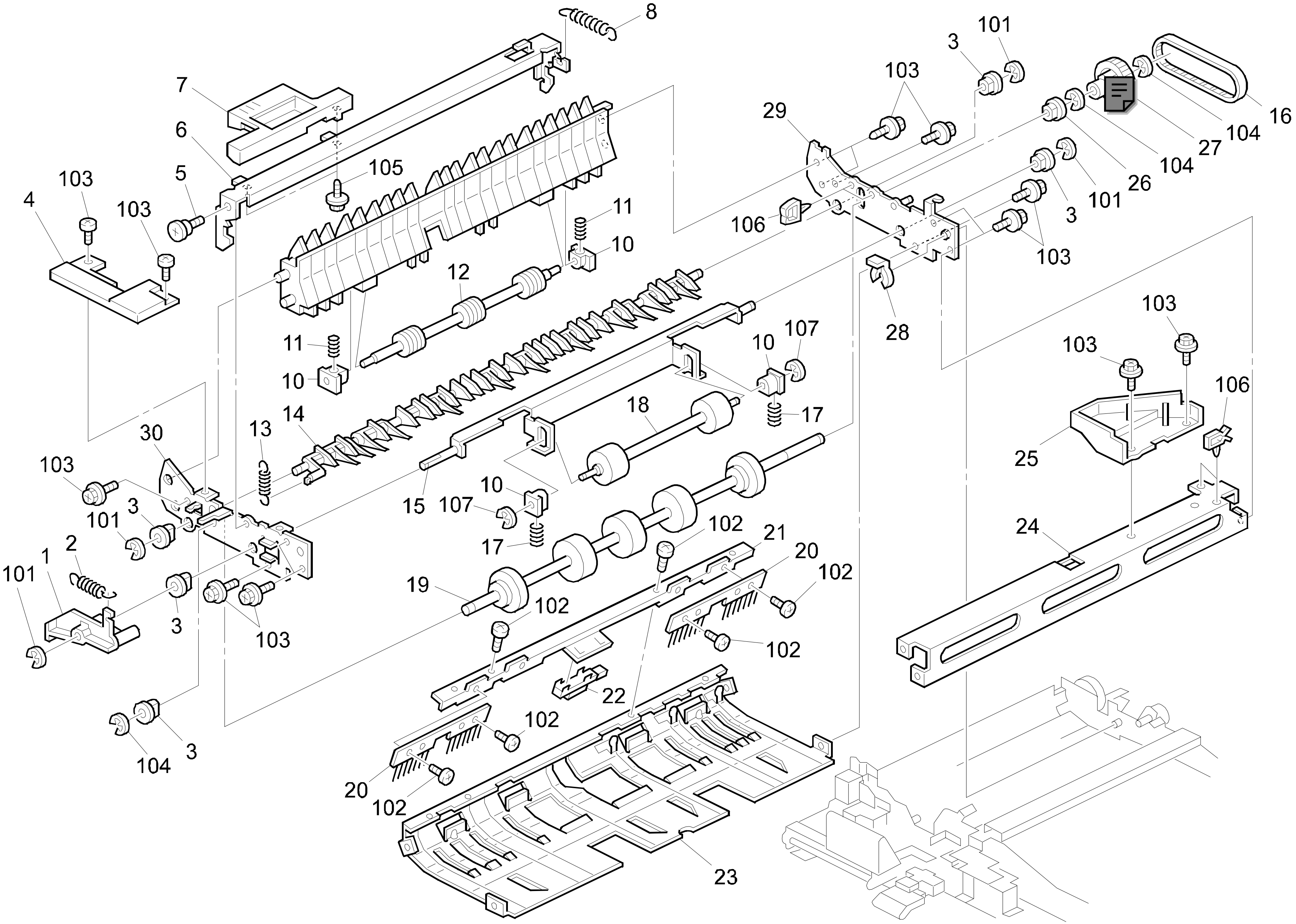
48.Inverter/Duplex Unit 1 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 4502	Duplex Unit	1
2	A229 4820	Duplex Inner Cover	1
3	AA03 3004	Decal - Misfeed Removal E1	1
4	A229 4821	Decal - Warning	1
5	AA14 3037	Development Cover Screw	2
6	A229 4717	Lower Left Guide Plate	1
7	A229 4808	Upper Harness Bracket	1
8	A229 4807	Lower Harness Bracket	1
9	A229 4684	Front Jogger Side Fence	1
10	A229 4687	Rear Jogger Side Fence	1
11	A229 4713	Reverse Guide Plate - Right Lower	1
12	A229 4716	Harness Plate Bracket	1
13	A229 4715	Optics Sensor Right Bracket	1
14	AW02 0102	Photointerruptor	1
15	A229 5442	Relay Harness - Duplex Sensor	1
16	A229 4726	Lower Transport Guide Plate	1
17	A229 4728	Driven Roller Spring Plate	6
18	AF02 2077	Driven Roller	6
19	A096 4928	Guide Plate Band	1
20	AF02 2067	Guide Stopper Roller	2
21	A229 4727	Guide Plate Pressure Holder	2
22	AA06 3581	Compression Spring	4
23	A229 4734	Decal - Guide Plate Lever	1
24	A229 4729	Guide Plate Lever	1
25	AA14 3307	Stepped Screw - M3	2
26	A096 4933	Guide Plate Lever Hook	1
27	5447 2681	Snap Ring	3
28	A300 2134	Guide Roller - B	2

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 4008B	Philips Tapping Screw - M4x8	
102	0451 4006B	Tapping Screw - 4x6	
103	0452 3006B	Tapping Screw - M3x6	
104	0450 4008B	Tapping Screw - 4x8	
105	0450 3006B	Tapping Screw - M3x6	
106	1105 0328	Harness Clamp - ES-0505	
107	0450 3008B	Tapping Screw - M3x8	
108	1105 0283	Clamp	

49.Inverter/Duplex Unit 2 (A229)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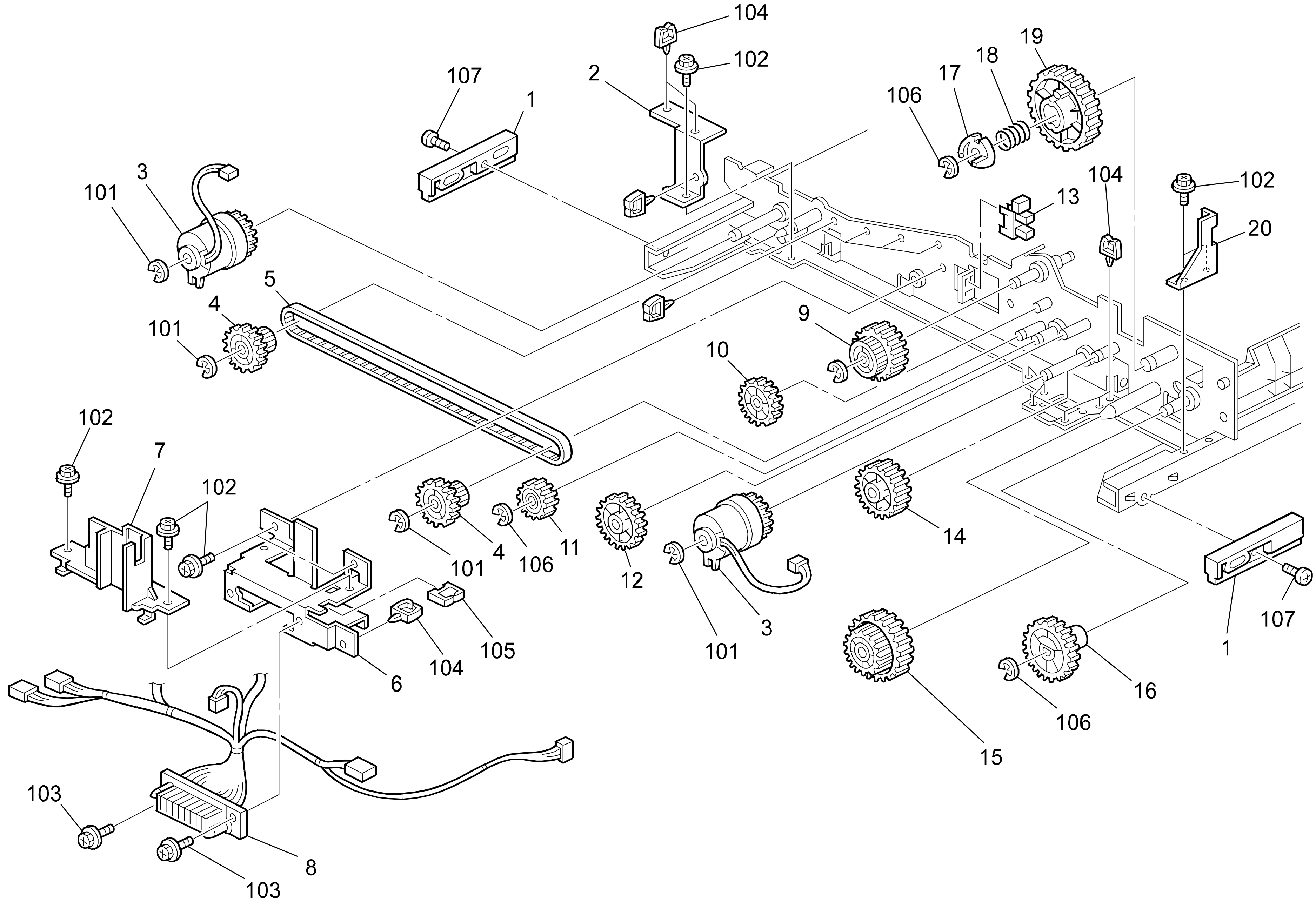
49.Inverter/Duplex Unit 2 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 4638	Reversal Driven Roller Lever	1
2	AA06 0729	Tension Spring	1
3	AA08 2046	Bushing - 6x12x6	5
4	A229 4655	Reverse Unit Cover	1
5	AA14 3420	Stepped Screw - M4x5	1
6	A229 4643	Grip Stay	1
7	A229 4647	Reverse Unit Knob	1
8	AA06 0730	Tension Spring	1
9	A229 4623	Lower Entrance Guide Plate	1
10	AA08 0034	Bushing - 4x5x7	4
11	AA06 3579	Compression Spring	2
12	A229 4624	Duplex Driven Roller	1
13	AA06 0728	Tension Spring	1
14	A229 4611	Reverse Gate Pawl	1
15	A229 4633	Reversal Bracket	1
16	AA04 3487	Timing Belt - Reverse Roller	1
17	AA06 3580	Compression Spring	2
18	AF02 0432	Driven Roller	1
19	AF02 0431	Reverse Roller	1
20	A229 4617	Duplex Discharge Brush	2
21	A229 4616	Photo Reflection Sensor Bracket	1
22	AW01 0049	Photo Reflection Sensor	1
23	A229 4620	Upper Entrance Guide Plate	1
24	A229 4627	Inverter Stay	1
25	A229 4628	Pressure Lever Cam	1
26	AA08 2047	Bushing - 8x16x7	1
27	AB03 0582	Reverse Pulley	1
28	5447 2681	Snap Ring	1
29	A229 4603	Rear Side Plate	1
30	A229 4602	Front Side Plate	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0720 0040B	Retaining Ring - M4	
102	0313 0050B	Philips Pan Head Screw - M3x5	
103	0354 0060B	Screw - M4X6	
104	0720 0060B	Retaining Ring - M6	
105	0450 3008B	Tapping Screw - M3x8	
106	1105 0283	Clamp	
107	0720 0030B	Retaining Ring - M3	

50.Inverter/Duplex Unit 3 (A229)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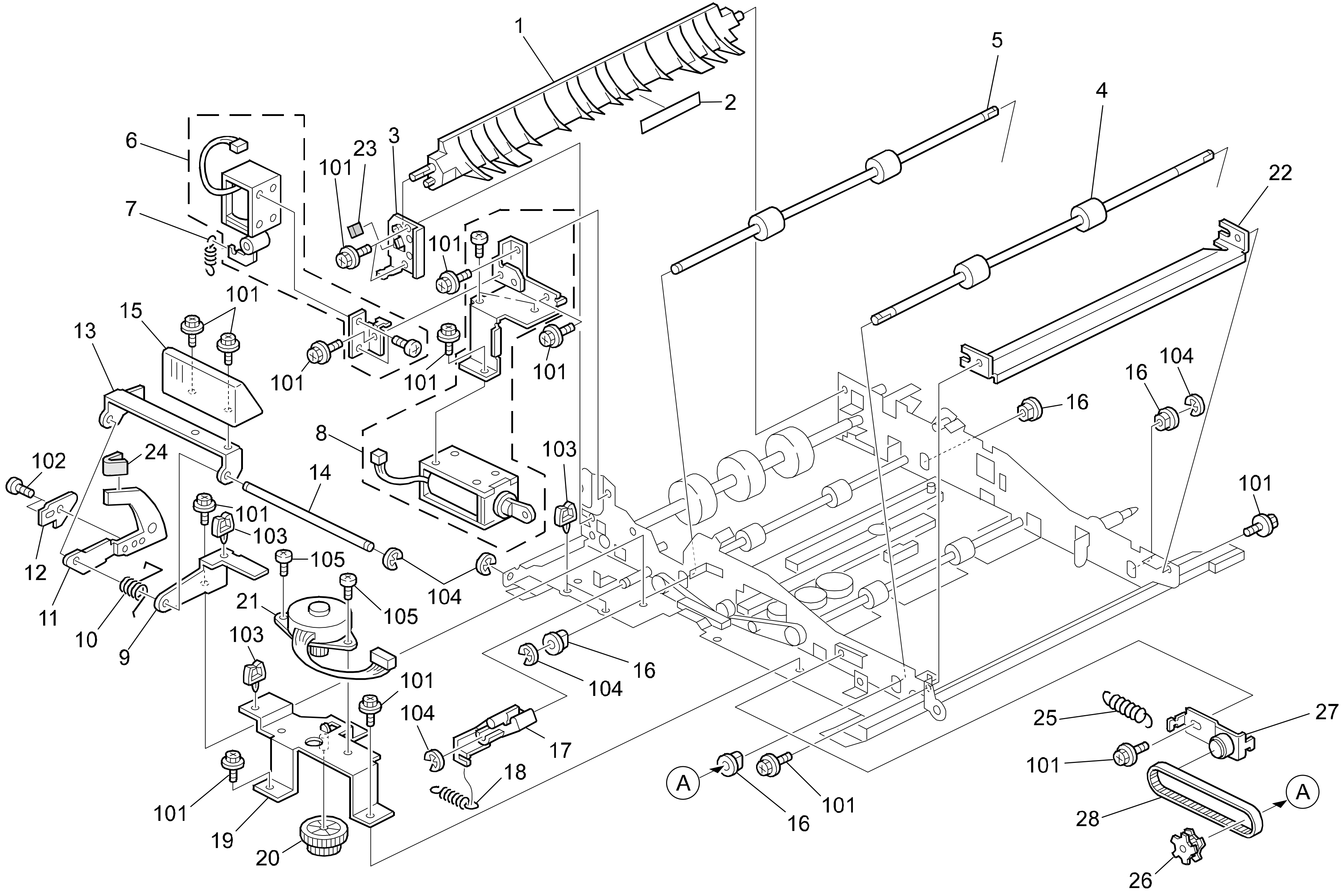
50.Inverter/Duplex Unit 3 (A229)

Index No.	Part No.	Description	Q’ty Per Assembly
1	A096 4595	Duplex Guide	2
2	A229 4679	Harness Bracket	1
3	AX20 0151	Magnetic Clutch - 0.25nxm	2
4	AB01 7469	Timing Pulley Gear	2
5	AA04 3489	Rear Timing Belt - Driven	1
6	A229 4818	Drawer Bracket	1
7	A229 4819	Harness Bracket	1
8	A229 5441	Duplex Unit Harness	1
9	AB01 7468	Idler Gear - 30Z	1
10	AB01 4084	Idler Gear - 31Z	1
11	AB01 4083	Reversal Roller Gear - 23Z	1
12	AB01 4082	Reversal Idler Gear - 31Z	1
13	AW02 0056	Photointerruptor - EE-SX4235A-P1	1
14	AB01 4081	Idler Gear - 29Z	1
15	AB01 4080	Idler Gear - 28/40Z	1
16	AB01 4124	Gear - 34Z	1
17	A229 4740	Drive Joint	1
18	AA06 3582	Compression Spring	1
19	AB01 4078	Drive Gear - 51Z	1
20	A229 4678	Protect Bracket	1

Index No.	Part No.	Description	Q’ty Per Assembly
101	0720 0040B	Retaining Ring - M4	
102	0451 4006B	Tapping Screw - 4x6	
103	0453 3008B	Bind Tapping Screw - M3x8	
104	1105 0199	Clamp	
105	1105 0328	Harness Clamp - ES-0505	
106	0720 0060B	Retaining Ring - M6	
107	0434 0080B	Pan Head Self-tapping Screw - M4x8	

51.Inverter/Duplex Unit 4 (A229)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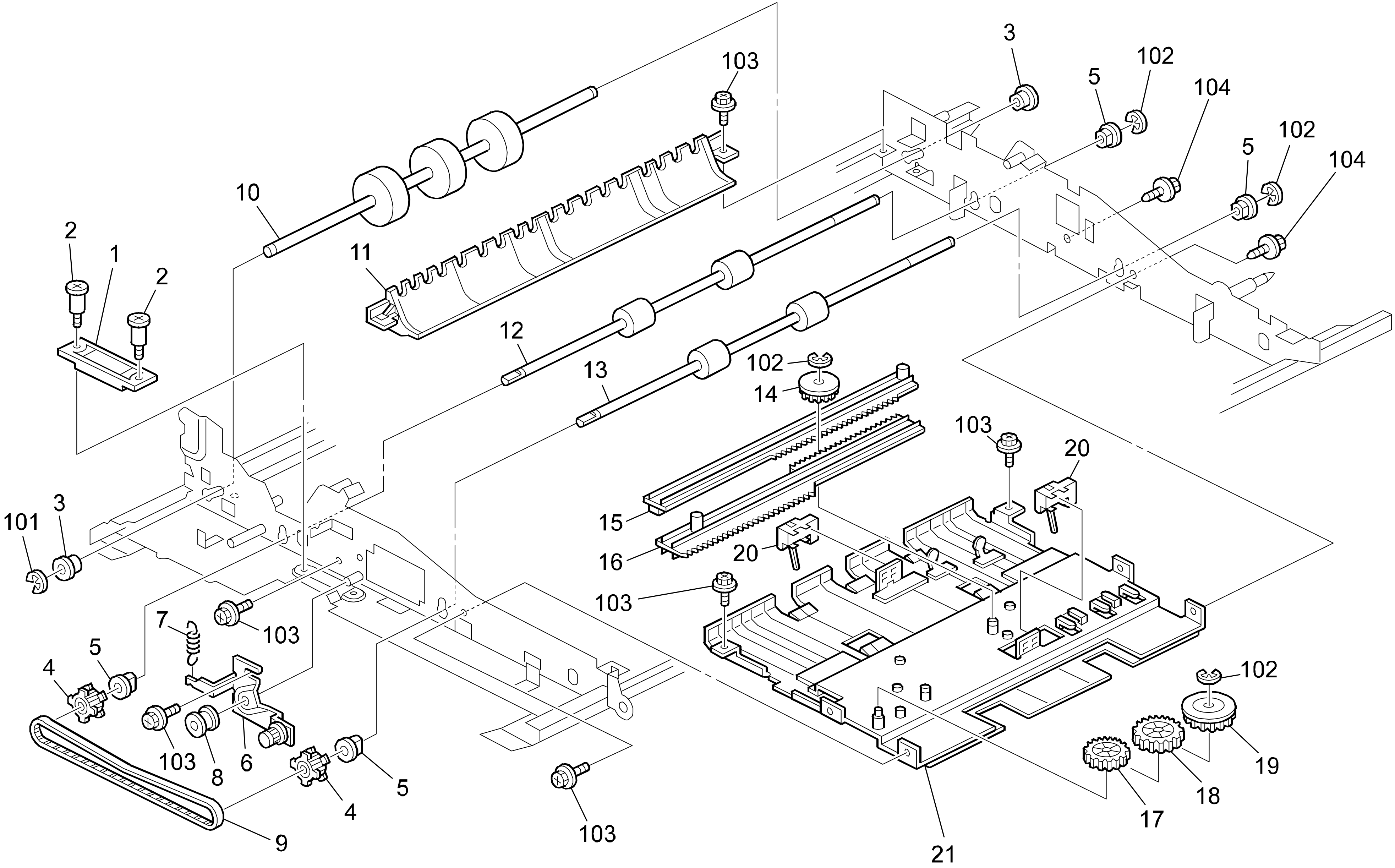
51.Inverter/Duplex Unit 4 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 4765	Duplex Gate Pawl	1
2	A229 4766	Damping Insulation	1
3	A229 4772	Gate Pawl Bracket	1
4	AF02 0435	Drive Roller	1
5	AF02 0434	Reversal Drive Roller	1
6	A229 4760	Gate Pawl DC Solenoid	1
7	AA06 0744	Tension Spring	1
8	A229 4780	Reversal DC Solenoid	1
9	A229 4804	Lever Support Bracket	1
10	AA06 6223	Grip Spring	1
11	A229 4812	Lock Arm	1
12	A229 4802	Lock Lever	1
13	A096 4882	Release Bracket	1
14	AA14 0504	Release Lever Shaft	1
15	A229 4806	Release Lever	1
16	AA08 2046	Bushing - 6x12x6	4
17	A229 4793	DC Solenoid Lever	1
18	AA06 0743	Tension Spring	1
19	A229 4708	Stepper Motor Bracket	1
20	AB01 4085	Idler Gear - 18/52Z	1
21	A134 5291	Jogger Drive Motor DC 6.48W	1
22	A229 4800	Exit Guide Plate	1
23	A229 4773	Gate Pawl Sound Proofing	1
24	A229 4813	Arm Pad	1
25	AA06 0764	Tension Spring	1
26	AB03 0583	Timing Pulley - 24Z	1
27	A229 4487	Exit Tightener	1
28	AA04 3390	Timing Belt - 40S2M192	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 4006B	Tapping Screw - 4x6	
102	0434 0080B	Pan Head Self-tapping Screw - M4x8	
103	1105 0199	Clamp	
104	0720 0040B	Retaining Ring - M4	
105	0453 3006B	Tapping Screw - M3x6	

52.Inverter/Duplex Unit 5 (A229)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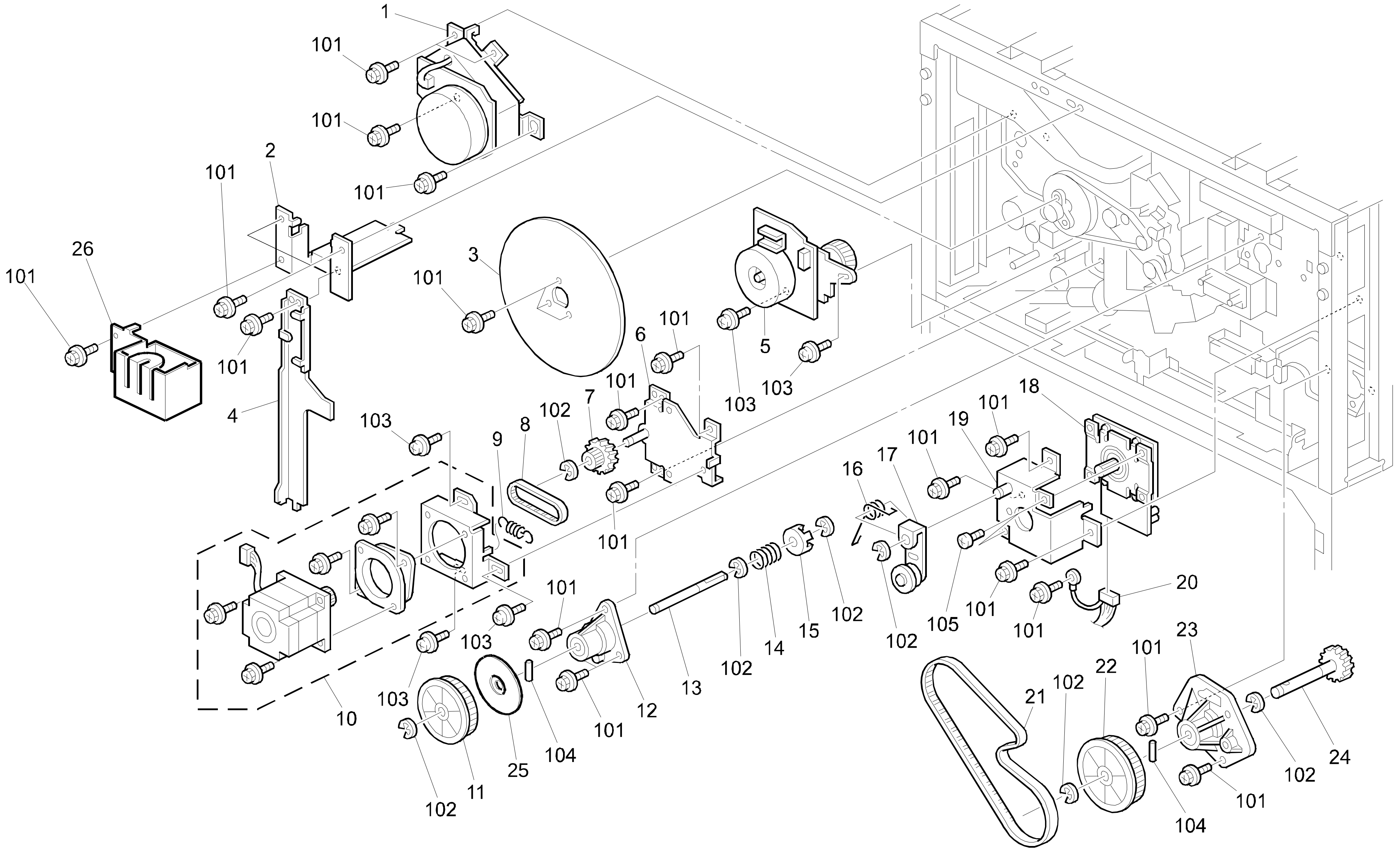
52.Inverter/Duplex Unit 5 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	AA02 1025	Magnet Catch	1
2	AA14 3183	Stepped Screw	2
3	A232 3566	Ball Bearing - 8x16x5	2
4	AB03 0583	Timing Pulley - 24Z	2
5	AA08 2046	Bushing - 6x12x6	4
6	A229 4755	Front Tightener	1
7	AA06 0742	Tension Spring	1
8	AB03 0431	Transport Pulley	1
9	AA04 3488	Timing Belt - Front Drive	1
10	AF02 0461	Duplex Roller	1
11	A229 4719	Lower Duplex Guide Plate	1
12	AF02 0435	Drive Roller	1
13	AF02 0436	Middle Drive Roller	1
14	AB01 4089	Side Fence Gear	1
15	A229 4688	Rear Side Fence Rack	1
16	A229 4685	Front Side Fence Rack	1
17	AB01 4086	Gear - 27Z	1
18	AB01 4087	Gear - 31Z	1
19	AB01 4088	Gear - 33Z	1
20	AW02 0102	Photointerruptor	2
21	A229 4705	Guide Stay	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0720 0060B	Retaining Ring - M6	
102	0720 0040B	Retaining Ring - M4	
103	0451 4006B	Tapping Screw - 4x6	
104	0451 4008B	Philips Tapping Screw - M4x8	

53.Drive Section 1 (A229)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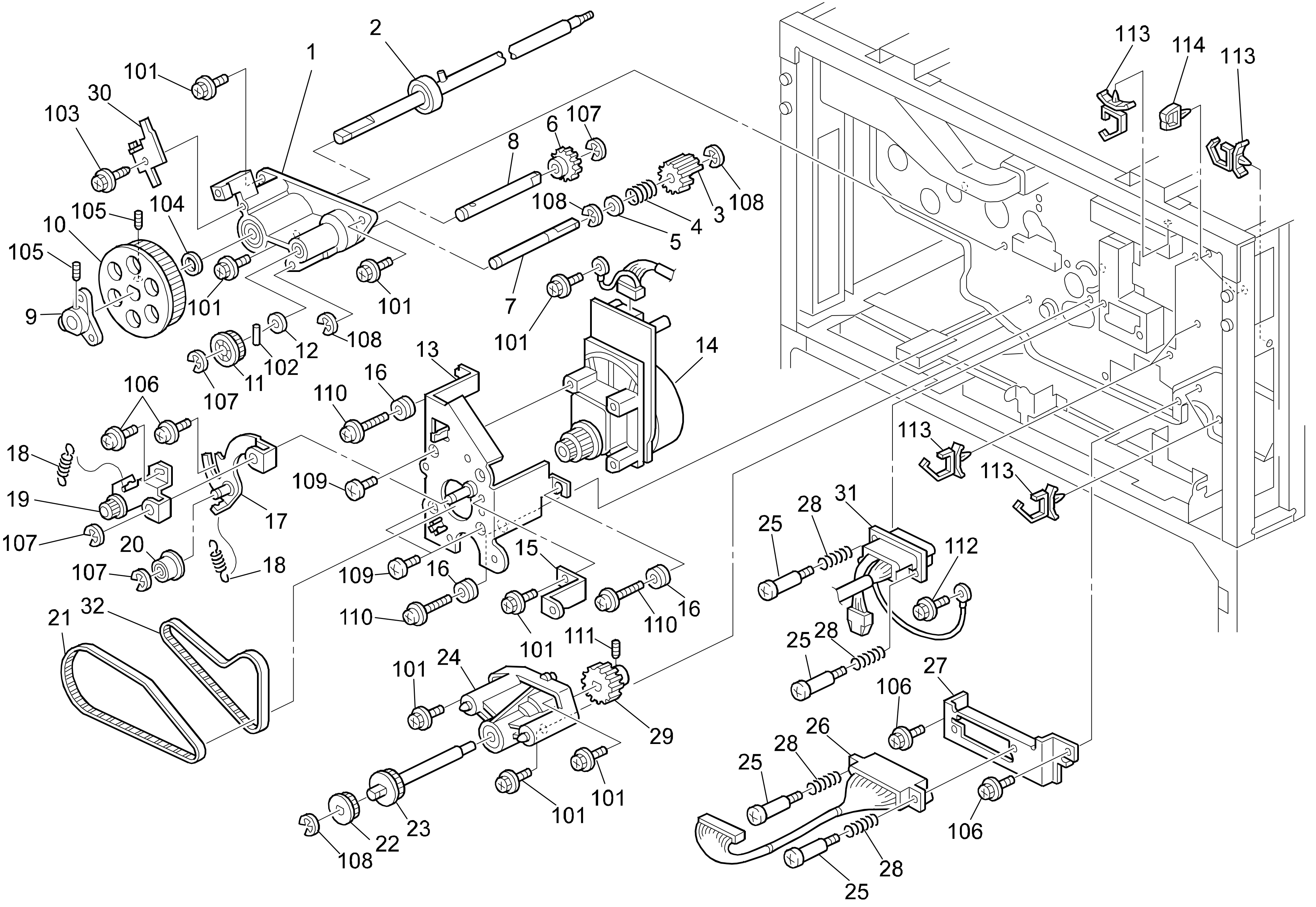
53.Drive Section 1 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A175 5305	Development Motor - [illegible]24W	1
2	A229 5891	Main Harness Guide	1
3	A134 1135	Fly Wheel	1
4	A229 5865	Harness Guide	1
5	A229 2845	Brushless Motor - DC8.22W	1
6	A229 1133	Stepper Motor Base Ass'y	1
7	AB01 7449	Gear - 21Z/24T	1
8	AA04 3269	Timing Belt - S2M114	1
9	AA06 0720	Tension Spring - 7.75n	1
10	A229 1026	Stepper Motor Ass'y - DC14.1W	1
11	AB03 0427	Pulley - 81Z	1
12	A096 1165	Fusing Drive Bracket	1
13	A229 1136	Fusing Drive Shaft	1
14	AA06 3490	Spring - 21.6mm	1
15	A096 1173	Fusing Drive Joint	1
16	AA06 6299	Torsion Spring	1
17	A096 1172	Tightener	1
18	AX06 0126	Brushless Motor - DC[illegible]W	1
19	A229 1126	Motor Bracket	1
20	A229 5420	Connecting Harness	1
21	AA04 3268	Timing Belt - 656P2[illegible]	1
22	AB03 0573	Pulley - 102Z	1
23	A096 1155	Duplex Drive Bracket	1
24	A229 1138	Duplex Drive Shaft	1
25	A229 1135	Ring - 55	1
26	A811 5510	Holder FCC	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 4008B	Philips Tapping Screw - M4x8	
102	0720 0060B	Retaining Ring - M6	
103	0951 4008B	Philips Screw With Washer - M4x8	
104	0623 0140E	Spring Pin - 3x14mm	
105	0354 0050B	Bind Screw - M4x5	

54.Drive Section 2 (A229)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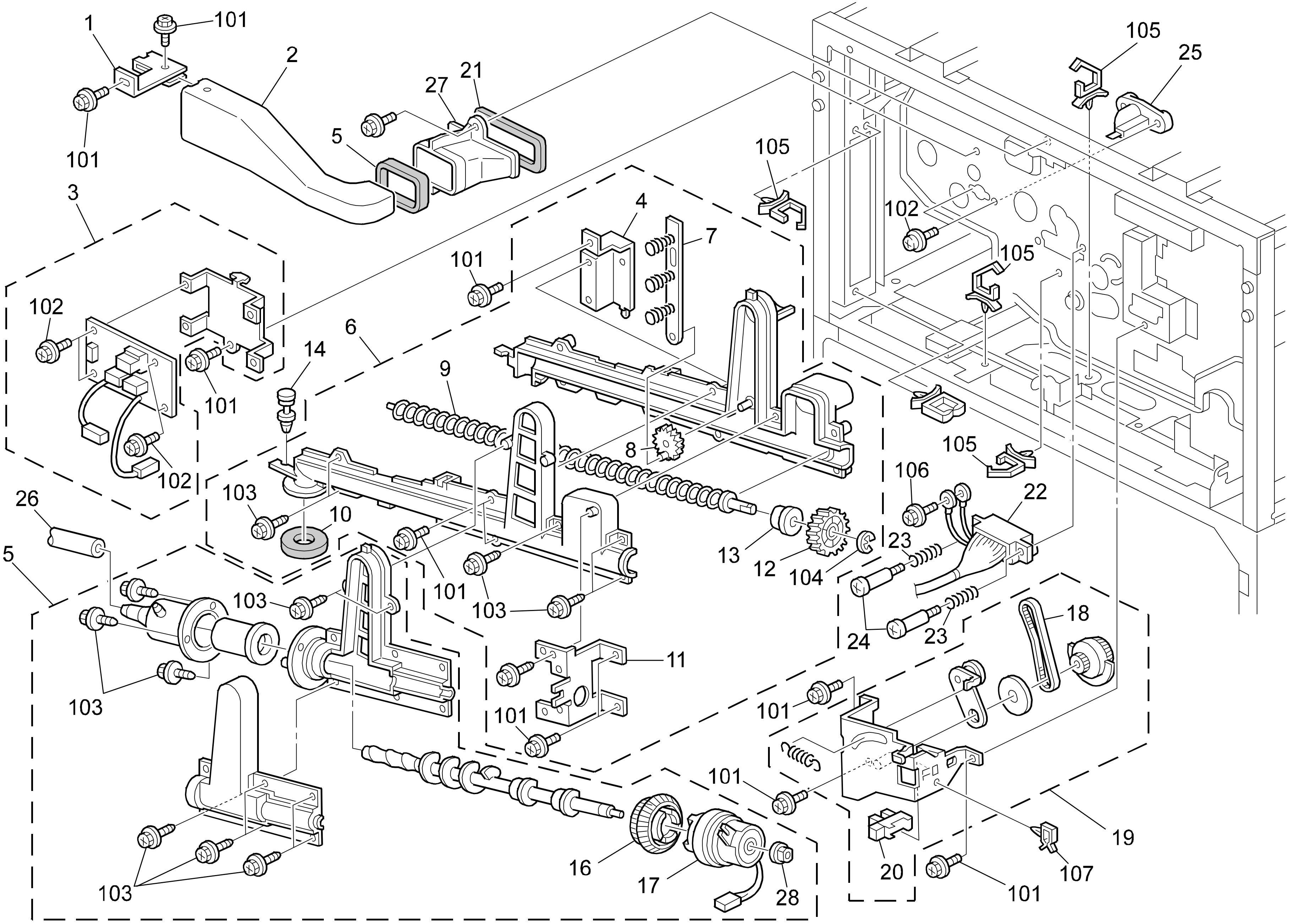
54.Drive Section 2 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 1180	Drum Shaft Stay	1
2	A229 1141	Drum Drive Shaft	1
3	AB01 7287	Joint Gear - 16z	1
4	AA06 3490	Spring - 21.6mm	1
5	AA13 2024	Spacer - M6	1
6	AB01 3772	Gear - 20Z	1
7	AA14 5205	Cleaning Relay Shaft	1
8	AA14 5266	Drive Cleaning Shaft	1
9	AA13 4092	Flange - Fly Wheel	1
10	A096 2316	Drum Pulley - 125z	1
11	AB03 0414	Pulley - 25Z	1
12	A001 2582	Spacer - 8x10x1.6mm	1
13	A229 1120	Main Motor Bracket	1
14	AX06 0125	DC Motor - DC20.8W	1
15	A229 5853	Right Fix Bracket	1
16	AA16 1104	Cushion - Motor	3
17	A229 1130	Cleaning Tightener Ass'y	1
18	AA06 0719	Tension Spring - 9.34n	2
19	A096 1115	Tightener	1
20	AB03 2716	Idle Pulley - M18	1
21	AA04 3267	Timing Belt - 426P2M6	1
22	AB03 0458	Pulley - 28Z	1
23	A096 1126	Belt Drive Shaft	1
24	A096 1123	Belt Drive Bracket	1
25	5446 5832	Connector Guide Pin	4
26	A229 5418	Duplex Harness	1
27	A229 4822	Drawer Bracket	1
28	AA06 3068	Spring Connector	4
29	AB01 3984	Gear - Z24	1
30	A229 1129	Ground Plate	1
31	A229 5600	AC Main Harness - 1	1
31	A229 7651	AC Main Harness - 2	1
32	AA04 3060	Timing Belt - 330PX	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 4012B	Tapping Screw - 4x12	
102	0633 0160E	Pin - 3x16mm	
103	0450 3006B	Tapping Screw - M3x6	
104	0807 7039	Spacer - M12	
105	0574 0040E	Hexagon Headless Set Screw - M4x4	
106	0951 4008B	Philips Screw With Washer - M4x8	
107	0720 0060B	Retaining Ring - M6	
108	0720 0040B	Retaining Ring - M4	
109	0354 0050B	Bind Screw - M4x5	
110	0451 4010B	Tapping Screw - 4x10	
111	0573 0040E	Hexagon Headless Set Screw - M3x4	
112	0801 0149	Philips Pan Head Screw - M4x6	
113	1105 0291	Harness Clamp - LWS-3S	
114	1105 0230	Clamp	

55.Drive Section 3 (A229)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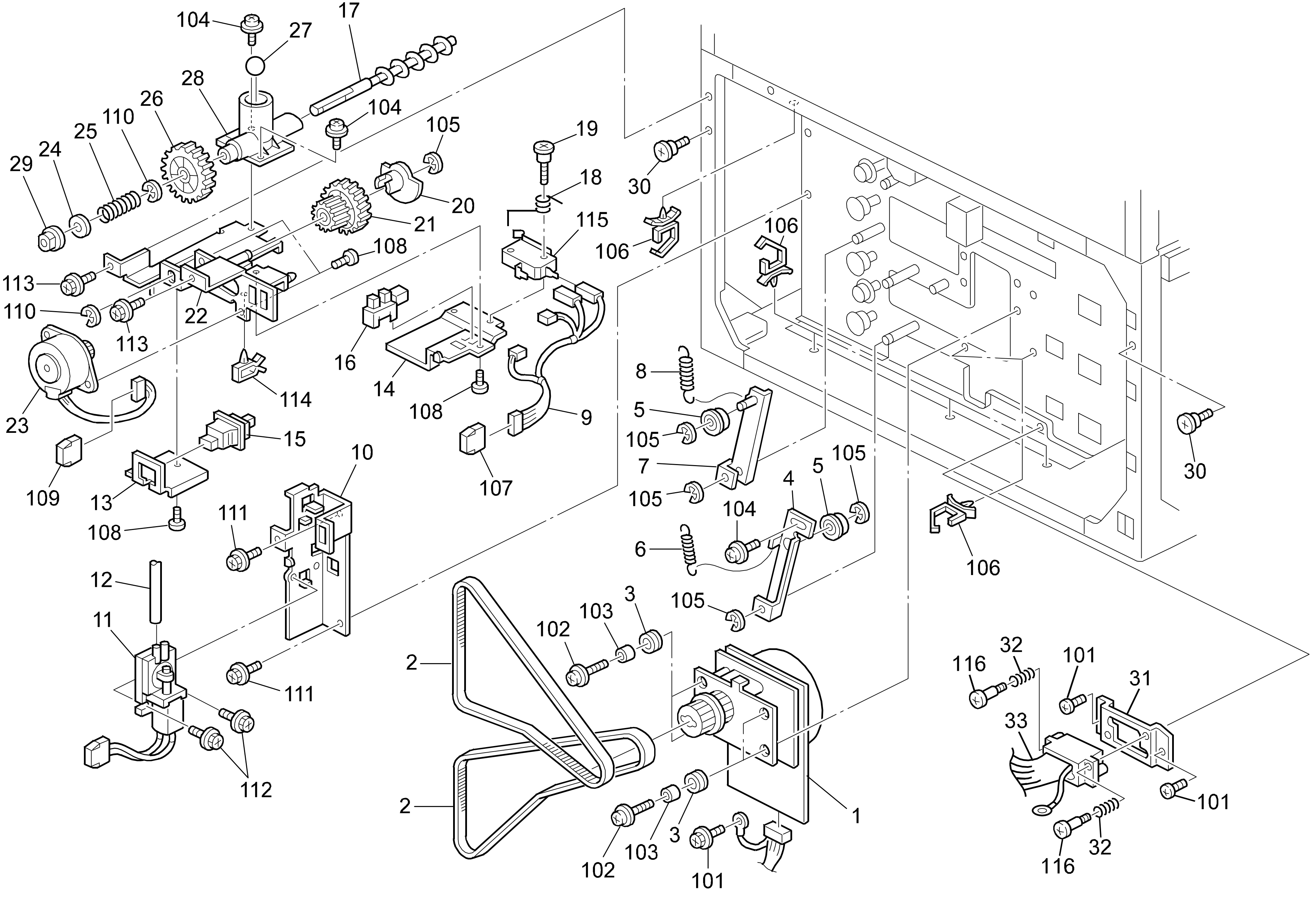
55.Drive Section 3 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A096 2089	Bracket - Duct - Vacuum,suction	1
2	A096 2088	Outer Duct	1
3	A229 5016	Power Pack Ass'y	1
4	A229 3572	Right Bracket	1
5	AA15 1771	Seal - 5x10x138	1
6	A229 3554	Toner Outlet Unit	1
7	A229 3641	Agitator Ass'y	1
8	AB01 5014	Toner Recycling Gear - 10Z	1
9	AD04 3052	Transport Screw	1
10	AA15 1814	Joint Seal - 21x32x10	1
11	A229 3639	Left Bracket	1
12	AB01 3846	Gear - 28Z	1
13	AA08 0187	Bushing - 6mm	2
14	A096 3697	Ratch	1
15	A229 3551	Toner Recycling Pump	1
16	AB01 7466	Gear - Z46/Z32	1
17	AX20 0152	Magnetic Clutch	1
18	AA04 3415	Timing Belt - 214P2M3	1
19	A229 3584	Drive Sub-unit - Toner Recycling	1
20	AW02 0056	Photointerruptor - EE-SX4235A-P1	1
21	AA15 1770	Middle Duct Seal	1
22	A229 5600	AC Main Harness - 1	1
22	A229 7651	AC Main Harness - 2	1
23	AA06 3068	Spring Connector	2
24	5446 5832	Connector Guide Pin	2
25	AA08 4043	Rear Development Holder	1
26	A229 3555	Toner Recycling Tube	1
27	A096 2083	Middle Duct	1
28	H053 2208	Bushing - M4	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 4008B	Philips Tapping Screw - M4x8	
102	0451 3008B	Tapping Screw - M3x8	
103	0450 3008B	Tapping Screw - M3x8	
104	0720 0040B	Retaining Ring - M4	
105	1105 0291	Harness Clamp - LWS-3S	
106	0801 0149	Philips Pan Head Screw - M4x6	
107	1105 0267	Harness Clamp - YMC-10-0	

56.Drive Section 4 (A229)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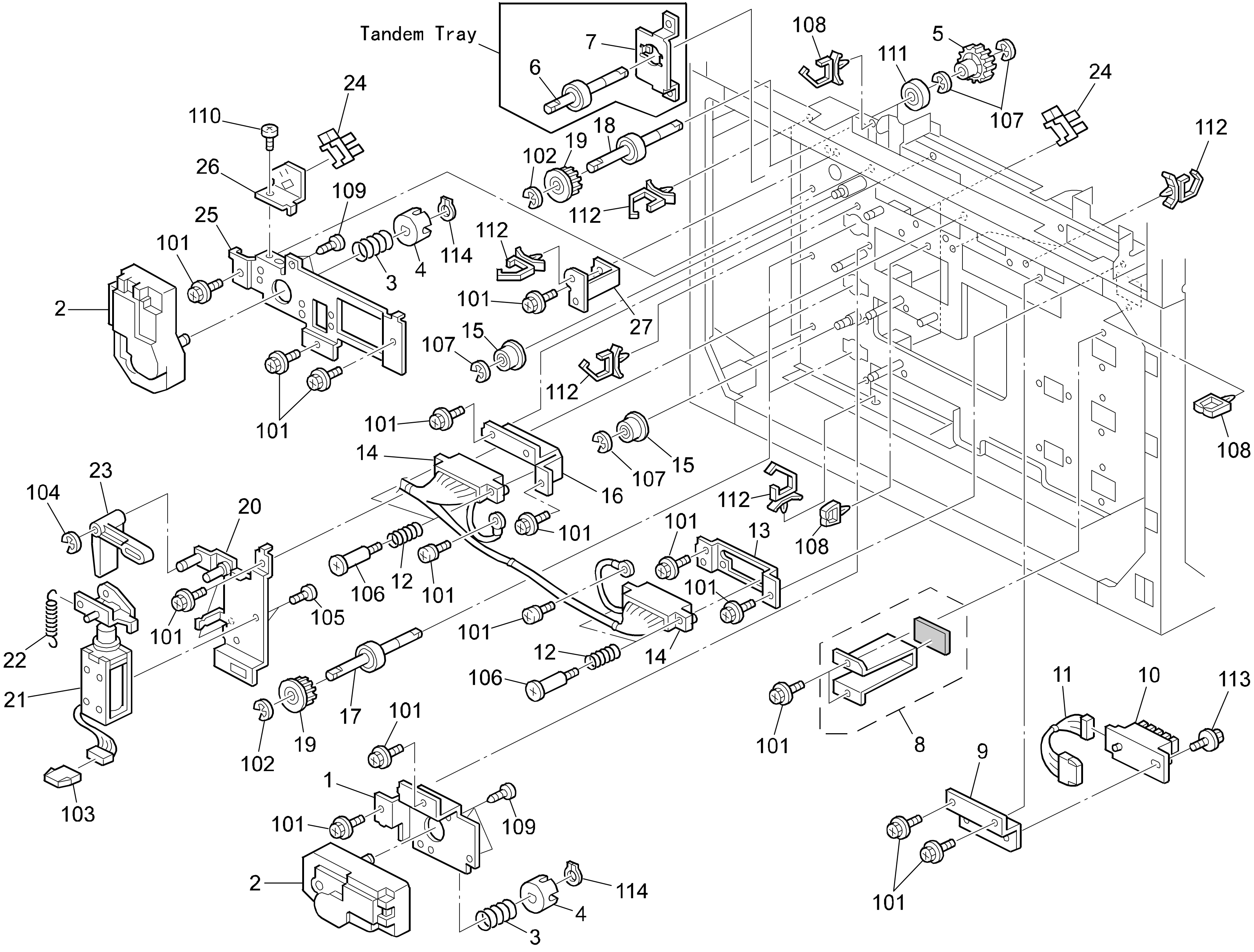
56.Drive Section 4 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 6155	Brushless Motor - DC23.5W	1
2	AA04 3344	Timing Belt - P3M675	2
3	AA16 1104	Cushion - Motor	4
4	A096 6186	Lower Tightner - P/B	1
5	AB03 2716	Idle Pulley - M18	2
6	AA06 0524	Tension Spring - 24.8mm	1
7	A096 6188	Upper Tightner - P/B	1
8	AA06 0525	Tension Spring - 43mm	1
9	A096 5414	Toner Collection Harness	1
10	A229 3623	Pump Unit Bracket	1
11	A229 3621	Pump Motor DC4W	1
12	A229 3563	Air Tube	1
13	A096 3763	Push Switch Bracket	1
14	A096 3742	Sensor Bracket	1
15	AW50 0012	Push Switch	1
16	AW02 0056	Photointerruptor - EE-SX4235A-P1	1
17	AD04 3032	Toner Collection Coil	1
18	A423 4433	Spring	1
19	A423 4432	Shoulder Screw - M2.5	1
20	A096 3752	Shutter Plate	1
21	AB01 7289	Gear - 17/45Z	1
22	A096 3722	Toner Collection Bracket	1
23	A096 5330	Toner Collection Motor - 12W	1
24	AA13 2024	Spacer - M6	1
25	AA06 3375	Spring - 24.3mm	1
26	AB01 1129	Gear - 45Z	1
27	A096 3736	Steel Ball - M11	1
28	A096 3729	Toner Collection Joint	1
29	5053 0709	Bushing - 6x10x6mm	1
30	5919 2201	Shoulder Screw - M4	2
31	A096 6815	Harness Bracket	1
32	AA06 3286	Spring	2
33	A229 7600	Rear Bank Harness	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 4008B	Philips Tapping Screw - M4x8	
102	0951 4012W	Philips Screw With Washer - M4x12	
103	0707 4050B	Bushing - 4 X5	
104	0951 4006B	Philips Screw With Washer - M4x6	
105	0720 0060B	Retaining Ring - M6	
106	1105 0291	Harness Clamp - LWS-3S	
107	1102 6250	Connector - 7P	
108	0314 0060B	Philips Pan Head Screw - M4x6	
109	1102 6248	Connector - 5P	
110	0720 0040B	Retaining Ring - M4	
111	0434 0060B	Pan Head Self-tapping Screw - M4x6	
112	0451 3008B	Tapping Screw - M3x8	
113	0434 0080B	Pan Head Self-tapping Screw - M4x8	
114	1105 0087	Clamp	
115	1204 2363	Microswitch - AH735454N	
116	0803 0058	Stepped Screw	

57.Drive Section 5 (A229)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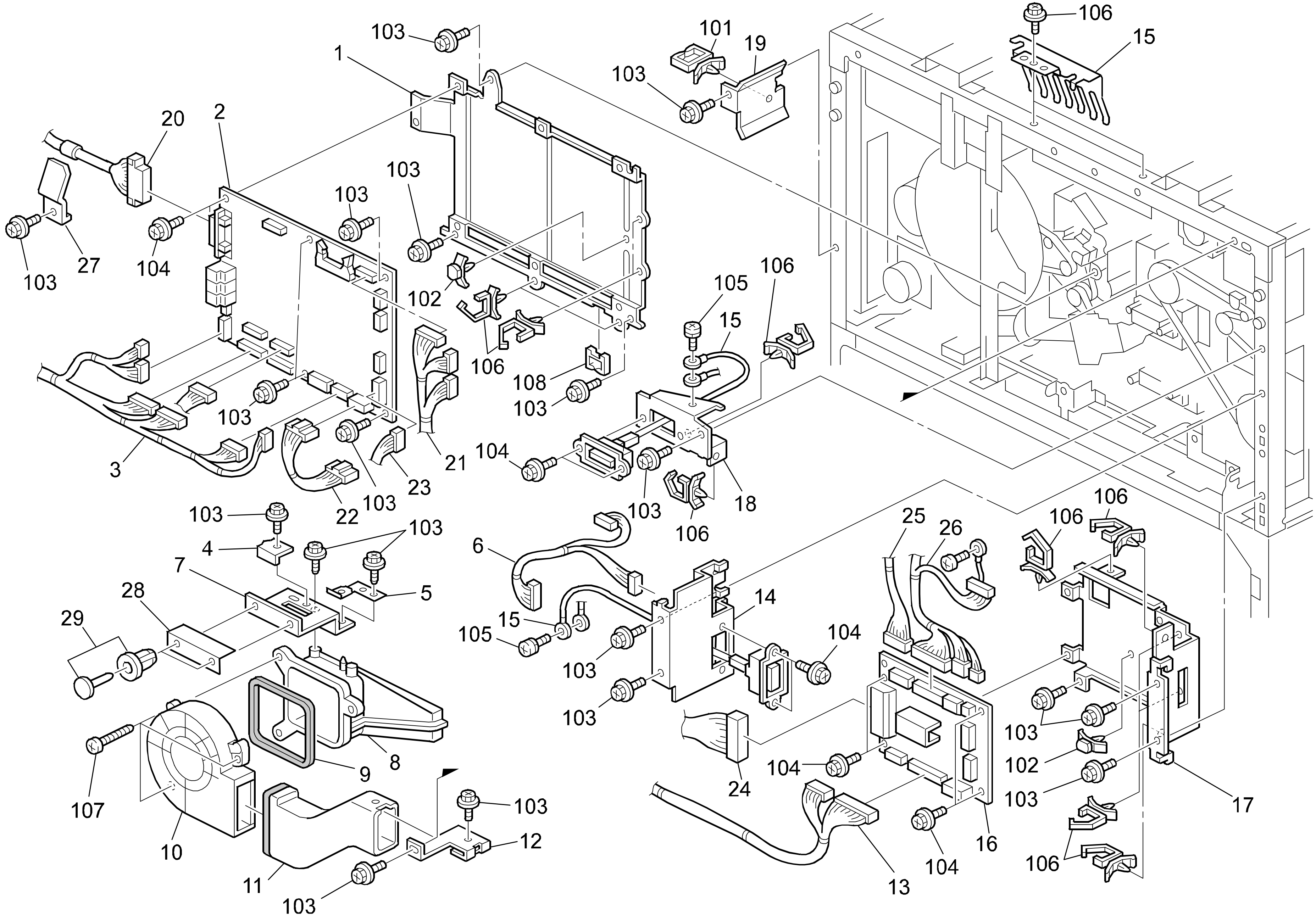
57.Drive Section 5 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A096 6168	Lift Motor Bracket	1
2	AX04 0063	Tray Lift Motor - DC 3.6W	2
2	AX04 0063	Tray Lift Motor - DC3.6W	2
3	AA06 3167	Pressure Spring	2
4	A097 6169	Lift Motor Joint	2
5	AB01 3781	Gear - 30Z	2
6	A247 6198	Uper Drive Shaft	1
7	A247 6165	Paper Support Plate	1
8	A096 6158	Paper Tray Stopper	1
9	A096 6177	Paper Size Bracket	1
10	AW50 0010	Push Switch	1
11	A096 5416	Paper Size Harness	1
12	AA06 3268	Connector Spring	4
13	A096 6690	Left Connector Bracket	1
14	A229 7600	Rear Bank Harness	2
15	AB03 2716	Idle Pulley - M18	2
16	A096 6689	Right Connector Bracket	1
17	A096 6199	Lower Drive Shaft	2
18	A096 6198	Paper Feed Drive Shaft	1
19	AB03 0391	Timing Pulley - 22Z	3
20	A096 6681	Lock Solenoid Bracket	1
21	A096 6683	Tray Lock Solenoid	1
22	AA06 0535	Lock Solenoid Spring	1
23	A096 6687	Lock Solenoid Arm	1
24	AW02 0056	Photointerruptor - EE-SX4235A-P1	3
25	A096 6170	Support Side Plate	1
26	A096 6691	Sensor Bracket	1
27	A229 5877	Right Fix Bracket	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 4008B	Philips Tapping Screw - M4x8	
102	0720 0060E	Retaining Ring - M6	
103	1102 6245	Relay Connector - 2P	
104	0720 0040B	Retaining Ring - M4	
105	0313 0050B	Philips Pan Head Screw - M3x5	
106	0803 0058	Stepped Screw	
107	0720 0060B	Retaining Ring - M6	
108	1105 0230	Clamp	
109	0414 0102B	Tapping Screw M4 X 10	
110	0314 0060B	Philips Pan Head Screw - M4x6	
111	0740 3008	Ball Bearing - 8x22x7	
112	1105 0310	Harness Clamp - LWS-1S	
113	0451 3008B	Tapping Screw - M3x8	
114	0727 0080	C-ring - M8	

58.Electrical Section 1 (A229)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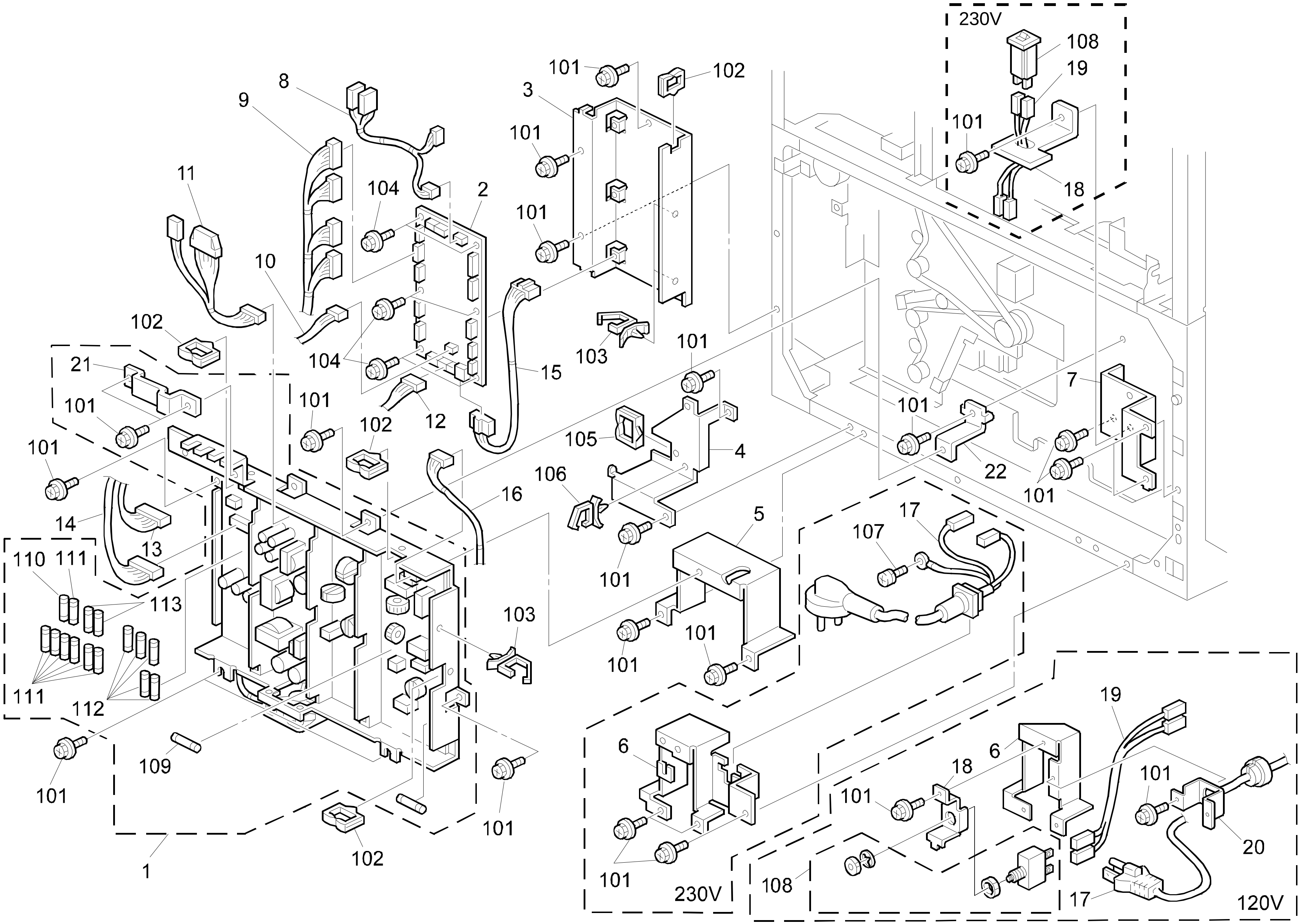
58.Electrical Section 1 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 5850	I/O Control Board Bracket	1
2	A229 5120	I/O Board	1
3	A229 5416	Right Harness	1
4	A096 2112	Fan Fixing Plate	1
5	A176 2113	Grounding Plate	1
6	A229 5503	Power Source Harness	1
7	A096 2101	Rear Duct Bracket	1
8	A096 2097	Rear Duct	1
9	AA15 1774	Rear Duct Seal	1
10	A176 2110	Fan Motor - DC24V 1[illegible]W	1
11	A096 2100	Exhaust Duct	1
12	A096 2109	Exhaust Duct Bracket	1
13	A229 5419	Connecting Harness	1
14	A229 5862	Plug Bracket - Finishing Sub-unit	1
15	A229 5506	Interface Harness	2
16	A229 5140	Interface Board	1
17	A229 5854	Interface Board Bracket	1
18	A229 5861	Plug Bracket - ADF	1
19	A229 5867	Plate Bracket	1
20	A229 5400	SBICU Harness	1
21	A229 5417	Left Harness	1
22	A229 5501	Connecting Harness	1
23	A229 5415	Process C Harness	1
24	A229 5508	I/O Control Harness	1
25	A229 5421	Safety Switch Harness	1
26	A229 5420	Connecting Harness	1
27	A229 5872	Harness Clamp	1
28	A229 1105	Rear Duct Spacer	1
29	A229 1192	Rivet4mm	1
30	A229 1832	Front Grounding Plate	2
101	1105 0291	Harness Clamp - LWS-3S	
102	1106 0554	Locking Support	
103	0451 4008B	Philips Tapping Screw - M4x8	
104	0451 3008B	Tapping Screw - M3x8	
105	0801 0149	Philips Pan Head Screw - M4x6	
106	1105 0310	Harness Clamp - LWS-1S	
107	0452 4016B	Tapping Bind Screw - M4x16	
108	1105 0243	Wire Saddle	

59.Electrical Section 2 (A229)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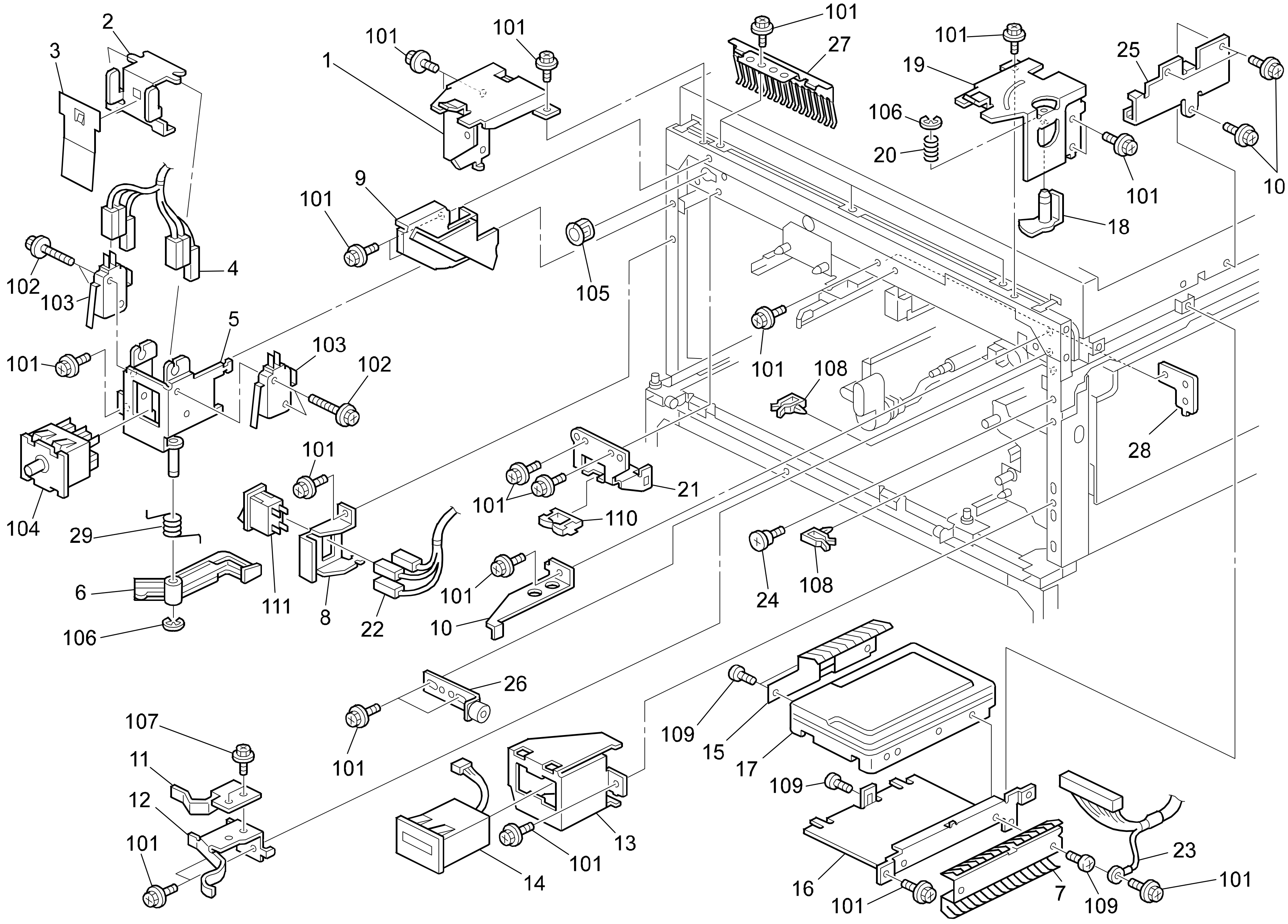
59.Electrical Section 2 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	AZ24 0045	Power Supply Unit - 115V	1
1	AZ24 0046	Power Supply Unit - 230V	1
2	A229 7510	Paper Feed Control Board	1
3	A229 5873	Paper Feed Control Board Bracket	1
4	A229 5874	Fix Bracket	1
5	A229 5875	Right Holder Bracket	1
6	A229 5883	Bracket - Power Supply Cord (120V)	1
6	A229 5876	Bracket - Power Supply Cord (230V)	1
7	A229 5878	Left Fix Bracket	1
8	A229 5485	Bank Motor Harness	1
9	A229 7601	Front Bank Harness	1
10	A229 5483	Safety Switch Harness	1
11	A229 5504	Control Harness	1
12	A229 5484	Paper Feed Motor Harness	1
13	A229 5507	Main Contro Harness	1
14	A229 5508	I/O Control Harness	1
15	A229 5502	DC Harness	1
16	A229 5601	Heater Harness	1
17	AZ00 0043	Power Supply Cord - 115V	1
17	AZ00 0044	Power Supply Cord - 230V	1
18	A229 5880	Circuit Braker Bracket - 120V	1
18	A229 5881	Circuit Braker Bracket - 230V	1
19	A229 5602	Circuit Breaker Harness	1
20	A229 5899	Cord Holder	1
21	A229 5890	Harness Clamp	1
22	A229 5887	Upper Fix Bracket	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 4008B	Philips Tapping Screw - M4x8	
102	1105 0349	Edge Saddle	
103	1105 0291	Harness Clamp - LWS-3S	
104	0451 3008B	Tapping Screw - M3x8	
105	1105 0430	Edging	
106	1105 0310	Harness Clamp - LWS-1S	
107	0801 0149	Philips Pan Head Screw - M4x6	
108	1107 0473	Circuit Breaker - 250V 10A (230V)	
108	1107 0866	Circuit Breaker - 250V 18A (115V)	
109	1107 0864	Fuse - 12A 250V	
110	1107 0873	Fuse - 4A 125V	
111	1107 0869	Fuse - 2A 125V	
112	1107 0868	Fuse - 5A 125V	
113	1107 0867	Fuse - 2A 125V	

60.Electrical Section 3 (A229)



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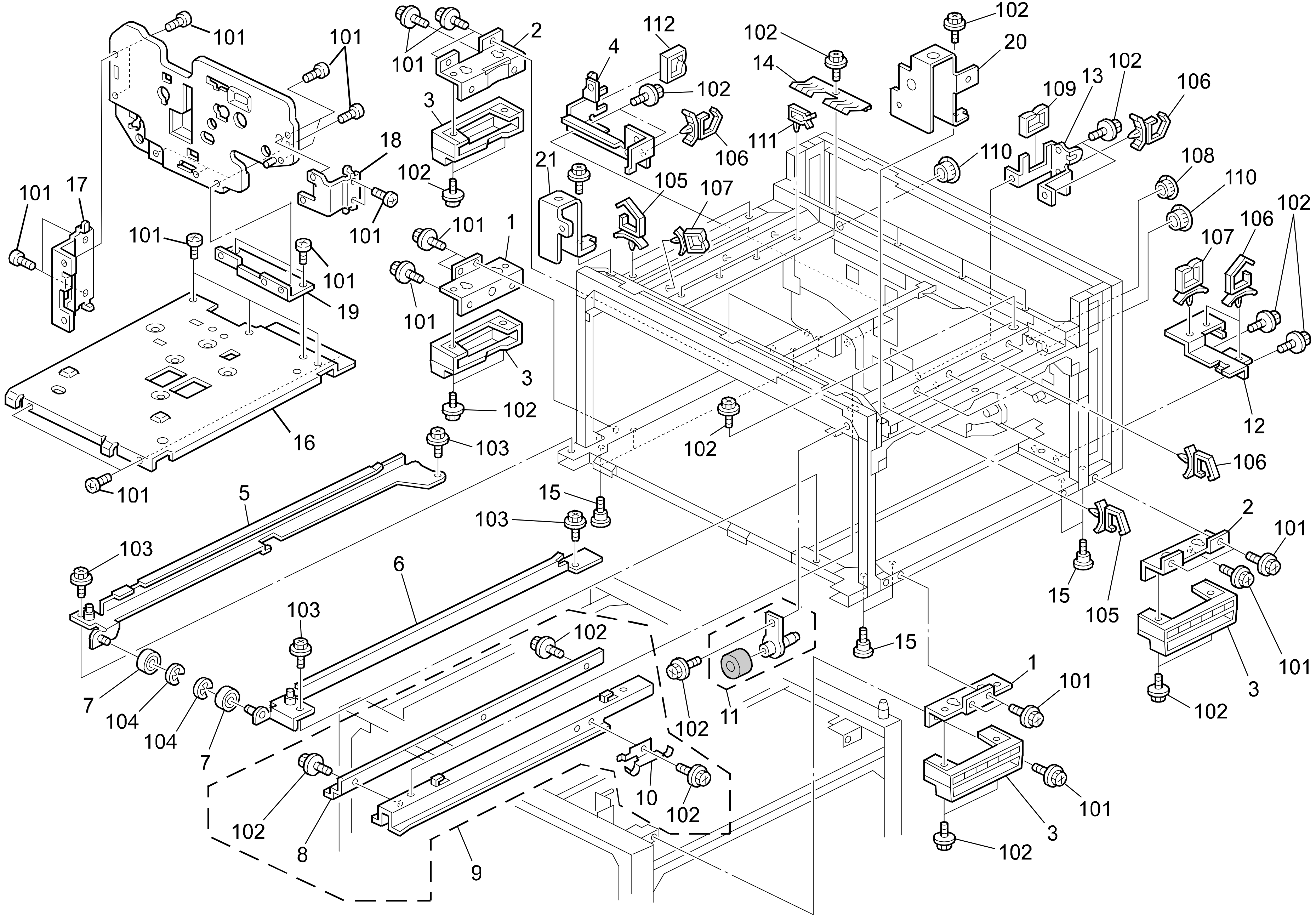
60.Electrical Section 3 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 1351	Left Holder	1
2	A229 5868	Safety Switch Lever	1
3	A229 5869	Safety Switch Damper	1
4	A229 5428	Switch Harness	1
5	A229 5857	Safety Switch Bracket	1
6	A229 5860	Upper Guide Plate Lever	1
7	A229 5894	HDD Ground Plate	1
8	A229 5856	Main Switch Bracket	1
9	A229 3322	Toner Bottle Supporter	1
10	A229 3312	Support Stay	1
11	A229 3311	Inner Back Cam	1
12	A229 3310	Toner Bottle Cam	1
13	A229 5871	Total Counter Bracket	1
14	AX31 0035	Total Counter	1
15	A229 5897	HDD Ground Plate	1
16	A229 5895	HDD Bracket	1
17	A229 5893	ATA HDD	1
18	A096 1355	Hinge Shaft	1
19	A229 1341	Upper Hinge Guide Plate	1
20	AA06 3052	Turret Spring	1
21	A229 5886	Front Bracket	1
22	A229 5600	AC Main Harness - 12	1
22	A229 7651	AC Main Harness - 230V	1
23	A229 5472	MSU Harness	1
24	5919 2201	Shoulder Screw - M4	1
25	A229 5888	Right Earth Bracket	1
26	A229 4830	Holder Bracket	1
27	A229 1833	Grounding Plate	3
28	A229 1094	Positioning Plate	3
29	AA06 6306	Lever Spring	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 4008B	Philips Tapping Screw - M4x8	
102	0451 3014B	Tapping Screw - M3x14	
103	1204 2355	Micro Switch - AM51632A531	
104	1204 2390	Interlock Switch - FA8l-AB24	
105	1106 0200	Bushing - 19.44mm	
106	0720 0040B	Retaining Ring - M4	
107	0451 3006B	Tapping Screw - M3x6	
108	1105 0452	Clamp	
109	0801 0153	Bind Screw - M6x32	
110	1105 0113	Edge - P108	
111	1204 2468	Switch - AC250/16A	

61.Frame Section 1 (A229)



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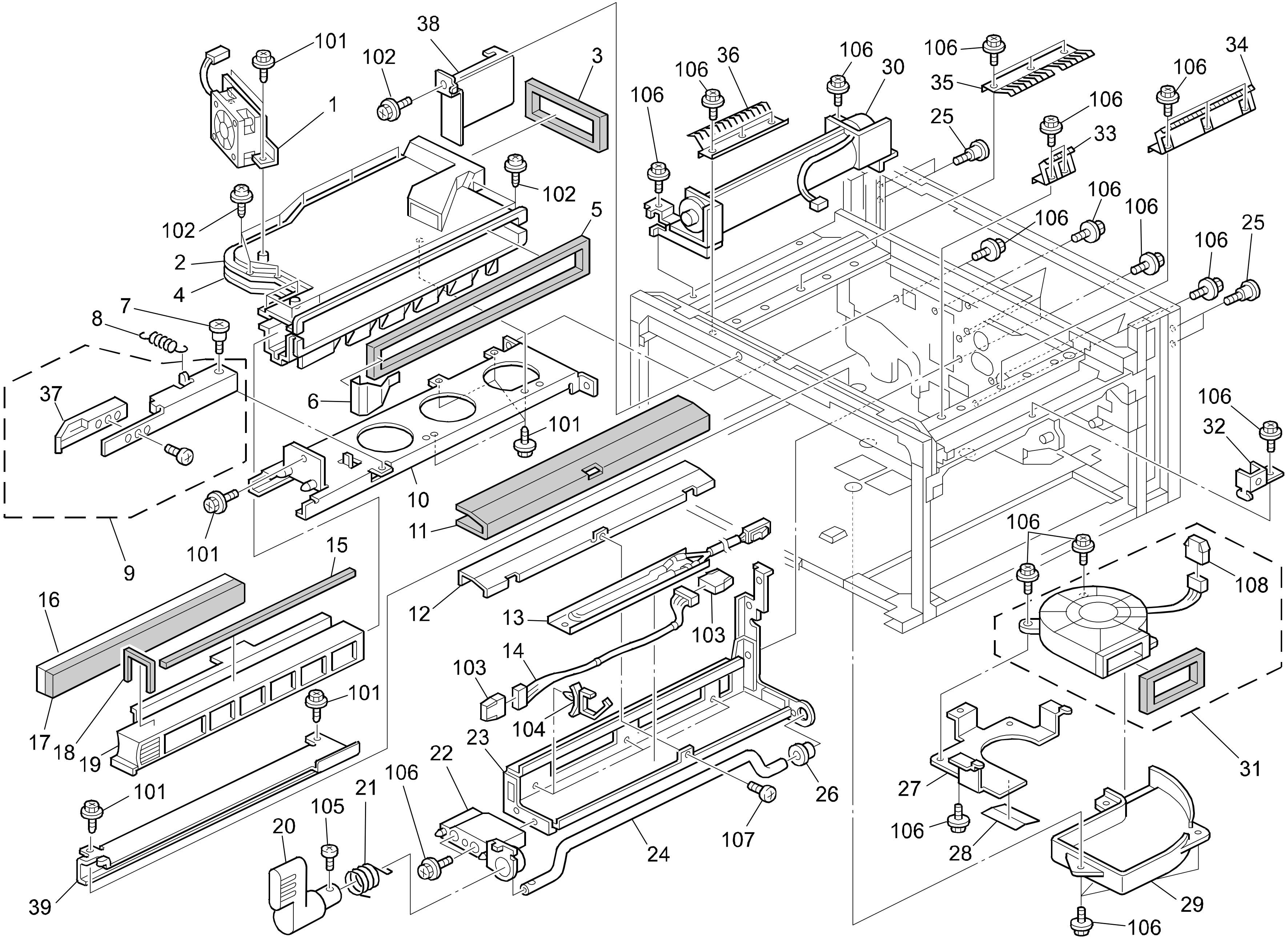
61.Frame Section 1 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A096 1095	Front Grip Bracket	2
2	A096 1096	Rear Grip Bracket	2
3	A096 1094	Grip Base	4
4	A229 5852	Left Fix Bracket	1
5	A229 4835	Left Rail	1
6	A096 4591	Right Duplex Rail	1
7	6754 2866	Roller - Positioning Guide	2
8	A096 1677	Right Rail - Drum Unit	1
9	A229 1095	Development Unit Rail	1
10	A096 1679	Development Grounding Plate	1
11	A229 3553	Toner Recycling Joint	1
12	A229 5866	Slide Rail Guide	1
13	A229 5851	Right Fix Bracket	1
14	A229 1750	Ground Plate - Rear	4
15	C201 5125	Stepped Screw - M6	8
16	A229 1075	Base Cover	1
17	A229 1078	Left Fixing Plate	1
18	A096 1077	Ight Fixing Plate	1
19	A229 1076	Lower Fixing Plate	1
20	A229 1091	Right Adjusting Pin	1
21	A229 1092	Left Adjusting Pin	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0450 4008B	Tapping Screw - 4x8	
102	0451 4008B	Philips Tapping Screw - M4x8	
103	0434 0080B	Pan Head Self-tapping Screw - M4x8	
104	0720 0040B	Retaining Ring - M4	
105	1105 0310	Harness Clamp - LWS-1S	
106	1105 0291	Harness Clamp - LWS-3S	
107	1105 0201	Harness Clamp	
108	1106 0053	Snap Bush - 12.7mm	
109	1105 0352	Clamp	
110	1106 0200	Bushing - 19.44mm	
111	1105 0452	Clamp	
112	1105 0349	Edge Saddle	

62.Frame Section 2 (A229)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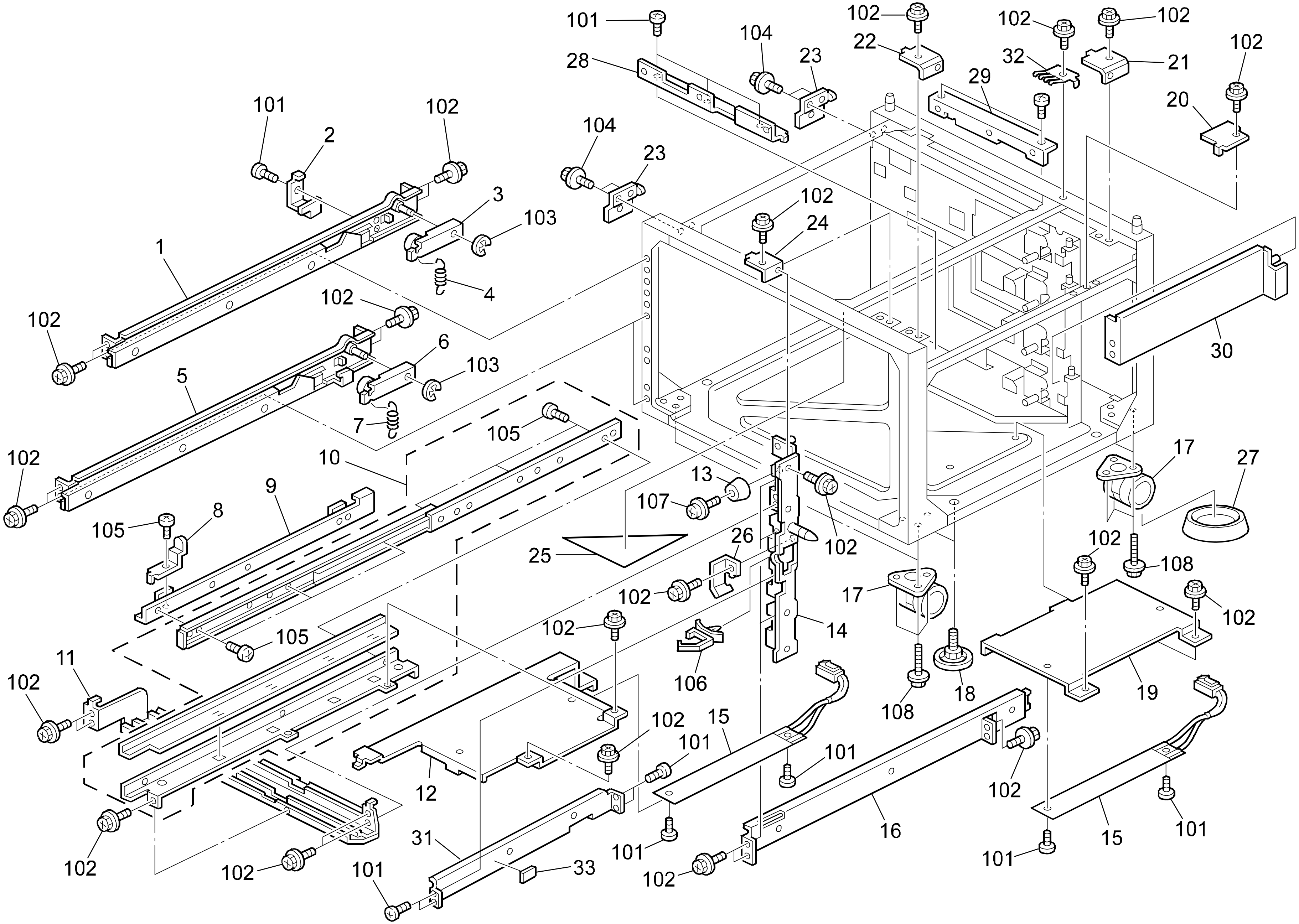
62.Frame Section 2 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A229 1114	Cooling Fan - DC 24V 1.92W	1
2	A229 1112	Upper Duct	1
3	AA15 1773	Rear Duct Seal	1
4	A229 1113	Lower Duct	1
5	AA15 3105	Duct Seal	1
6	A229 1106	Duct Shield Guide	1
7	5446 3648	Stepped Screw - M4	1
8	AA06 0541	Bushing Lock Spring	1
9	A229 4260	Fusing Lock Lever	1
10	A096 4249	Fusing Unit Rail	1
11	AA17 2013	Heater Cover	1
12	A096 3956	Heater Cover	1
13	AX40 0047	Anticondensation Heater - 115V 15W	1
13	AX40 0048	Anticondensation Heater - 230V 15W	1
14	A229 5412	Transfer Connecting Harness	1
15	AA15 3101	Seal - 363x2x5	1
16	AA01 2106	Filter	1
17	**AA01 0101**	**Ozone Filter**	**1**
18	AA15 3102	Seal - 96x2x3	1
19	A229 1107	Ozone Filter Guide	1
20	A096 3960	Belt Unit Knob	1
21	AA06 6218	Unit Release Spring	1
22	A096 3955	Front Holder	1
23	A229 3951	Transfer Unit Guide Plate	1
24	A096 3959	Release Arm	1
25	5919 2201	Shoulder Screw - M4	4
26	AA08 0158	Bushing - 12x16x12.1	1
27	A097 5550	Fan Motor Bracket	1
28	A097 5552	Fan Plate	1
29	A097 5551	Fan Motor Duct	1
30	A229 1116	Exit Cooling Fan - DC24V 5.8W	1
31	A097 5553	Cooling Fan Motor - [illegible]24V 9.6W	1
32	A229 5884	HDD Fix Bracket	1
33	A229 1752	Ground Plate - Right Short	1
34	A229 1751	Ground Plate - Right Long	1

Index No.	Part No.	Description	Q'ty Per Assembly
35	A229 1753	Ground Plate - Left Long	1
36	A229 1754	Ground Plate - Left Short	1
37	A096 4263	Lock Lever Knob	1
38	A229 1099	Rail Cover	1
39	A229 1098	Left Drum Rail	1
101	0450 4008B	Tapping Screw - 4x8	
102	0450 3008B	Tapping Screw - M3x8	
103	1102 6252	Connector - 9P	
104	1105 0278	Harness Clamp - LWS-1S	
105	0314 0060B	Philips Pan Head Screw - M4x6	
106	0451 4008B	Philips Tapping Screw - M4x8	
107	0313 0050B	Philips Pan Head Screw - M3x5	
108	1102 6245	Relay Connector - 2P	

63.Frame Section 3 (A229)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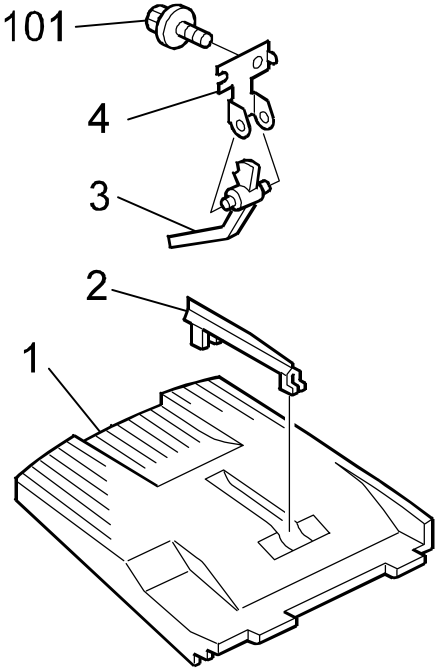
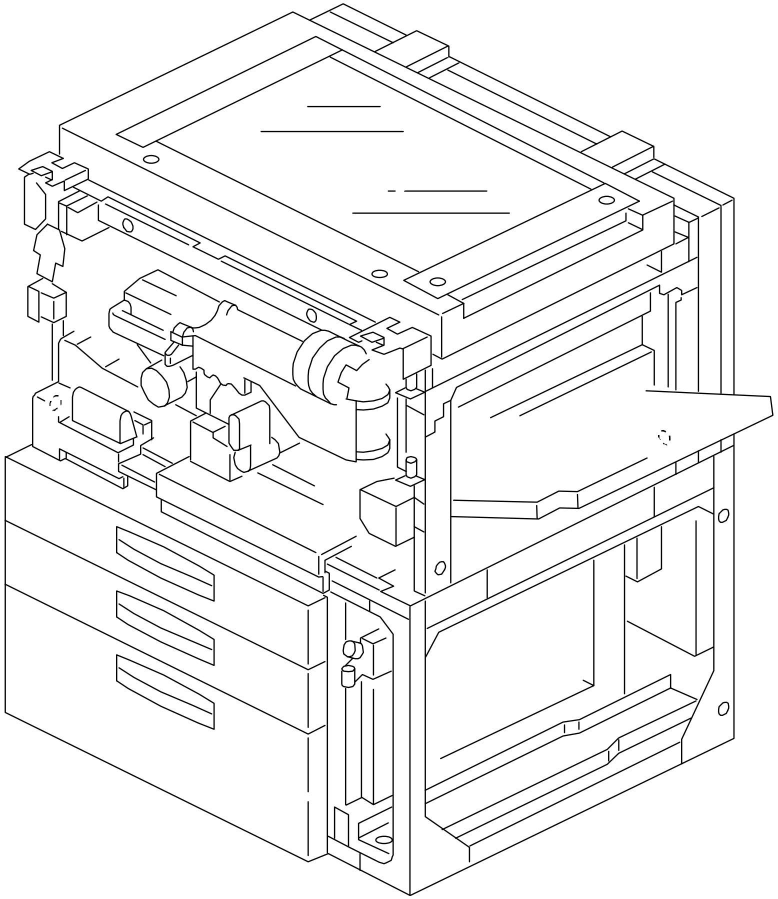
63.Frame Section 3 (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A096 6241	Left Rail - Tandem Tray	1
2	A096 6246	Left Rail Bracket	1
3	A096 6247	Lock Arm - Tandem Tray	1
4	AA06 0592	Lock Spring - Tandem Tray	1
5	A096 6261	Left Rail	2
6	A096 6266	Tray Lock Arm	2
7	AA06 0534	Tray Lock Spring - 19mm	2
8	A176 6291	Tray Stopper	1
9	A096 6277	Middle Slide Rail 2	1
10	A176 6287	Middle Slide Rail	1
11	A176 6284	Stay	1
12	A096 6101	Upper Heat Sink	1
13	5446 2560	Cushion - Paper Tray	1
14	A176 6181	Front Side Plate - P/B	1
15	AX40 0070	Anticondensation Heater - 115V 15W	2
15	AX40 0069	Anticondensation Heater - 230V 15W	2
16	A096 6250	Right Rail	3
17	AH01 2015	Caster - 1470N	4
18	AH01 1004	Screw Stand	2
19	A096 6100	Lower Heat Sink	1
20	A096 6081	Collection Bottle Stopper	1
21	A096 6079	Right Rear Frame Joint	1
22	A096 6078	Right Front Frame	1
23	A096 6080	Left Frame Joint	2
24	A096 6077	Upper Front Fixing Plate	1
25	A096 6693	Paper Guide Sheet	1
26	A176 6110	Harness Cover	1
27	AH01 3008	Leveling Foot Guide	4
28	A096 6075	Lower Rear Fixing Plate	1
29	A096 6076	Upper Rear Fixing Plate	1
30	A096 6111	4th Tray Cover	1
31	A229 6115	Support Stay	1
32	A229 6077	Rear Upper Growunding Plate	1
33	AA16 1096	Stopper Cushion	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0314 0060B	Philips Pan Head Screw - M4x6	
102	0451 4008B	Philips Tapping Screw - M4x8	
103	0720 0040B	Retaining Ring - M4	
104	0434 0080B	Pan Head Self-tapping Screw - M4x8	
105	0434 0060B	Pan Head Self-tapping Screw - M4x6	
106	1105 0291	Harness Clamp - LWS-3S	
107	0951 4012W	Philips Screw With Washer - M4x12	
108	5301 1662	Hexagon Bolt	

64.Option Exit Tray (A814)



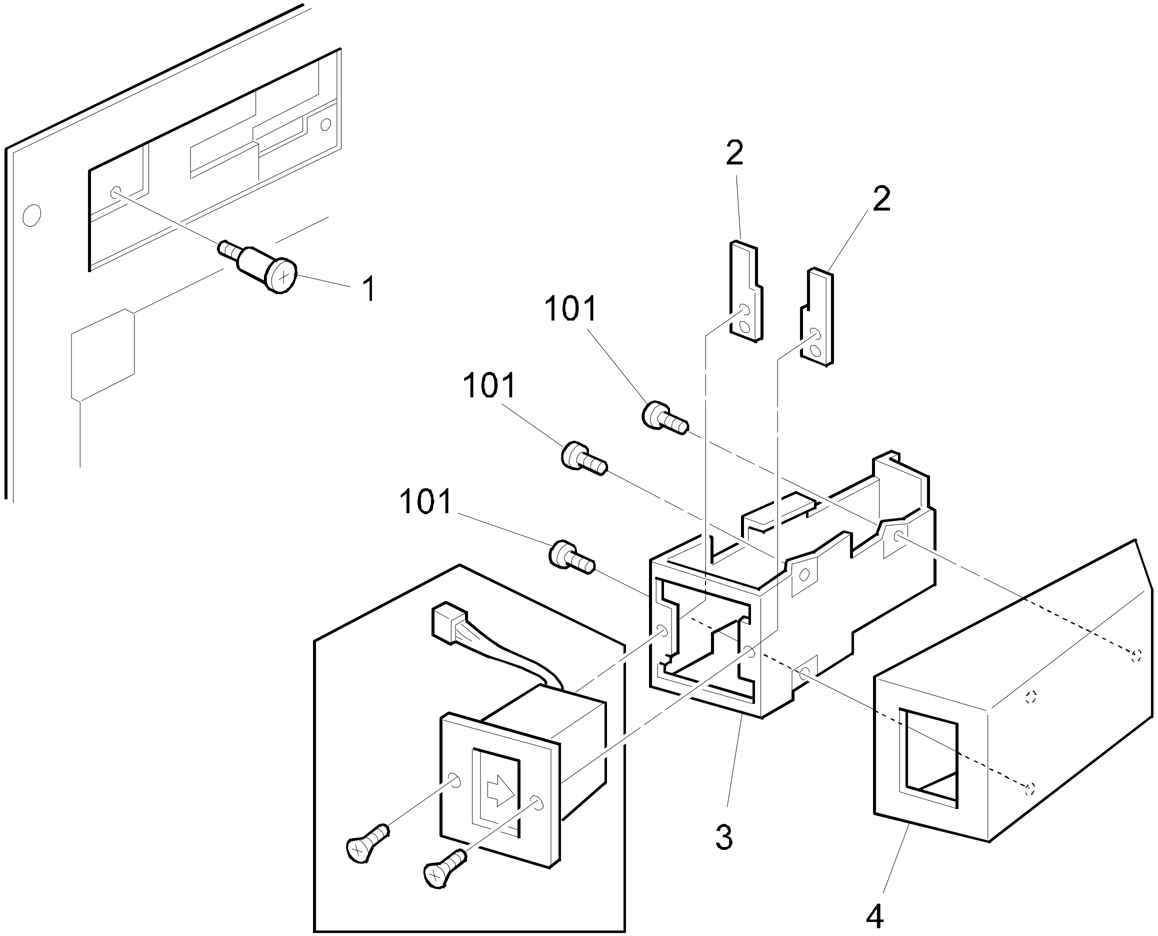


64.Option Exit Tray (A814)

Index No.	Part No.	Description	Q'ty Per Assembly
1	AF04 3101	Copy Tray - Exit	1
2	AF04 3077	Copy Tray Guide	1
3	A379 1225	Upper Sensor Actuator	1
4	A353 3172	Actuator Bracket	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 3006B	Tapping Screw - M3x6	

65.Key Counter unit (A674)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65.Key Counter unit (A674)

Index No.	Part No.	Description	Q'ty Per Assembly
1	AA14 3710	Stepped Screw - M4	1
2	A509 1063	Plate Nut	2
3	A509 1055	Key Counter Bracket Ass'y	1
4	A598 1260	Key Counter Cover	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0452 4008B	Tapping Screw - M4x8	

66.I/O Board (A229)

CAPACITOR

SYMBOL NO.	INDEX NO.
C101	215
C102	----
C103	215
C104	211
C105	211
C106	208
C107	215
C108	215
C109	213
C110	213

SYMBOL NO.	INDEX NO.
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C112	215
C113	217
C114	217
C115	212
C116	215
C117	215
C118	213
C119	215
C120	215

SYMBOL NO.	INDEX NO.
C121	215
C122	210
C123	208
C124	213
C125	214
C126	215
C127	214
C128	209
C129	209
C130	209

SYMBOL NO.	INDEX NO.
C131	214
C132	210
C133	210
C134	215
C135	215
C136	215
C137	215
C138	215
C139	215
C140	215

SYMBOL NO.	INDEX NO.
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C142	217
C143	215
C144	215
C145	215
C146	215
C147	215
C148	213
C149	215
C150	215

SYMBOL NO.	INDEX NO.
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C152	215
C153	215
C154	215
C155	175
C156	215
C157	215
C158	215
C159	217
C160	215

SYMBOL NO.	INDEX NO.
C161	215
C162	175
C163	215
C164	215
C165	215
C166	215
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C168	215
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C170	215

CAPACITOR

SYMBOL NO.	INDEX NO.
C171	215
C172	215
C173	215
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SYMBOL NO.	INDEX NO.
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SYMBOL NO.	INDEX NO.
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C197	213
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C200	215

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C210	216

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SYMBOL NO.	INDEX NO.
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C225	----
C226	----
C227	----
C228	----
C229	----
C230	----

SYMBOL NO.	INDEX NO.
C231	215
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C233	215
C234	215
C235	215
C236	----
C237	213
C240	215
C241	215

66.I/O Board (A229)

CONNECTOR

SYMBOL NO.	INDEX NO.
CN200	102
CN201	116
CN202	107
CN203	111
CN204	113
CN205	105
CN206	114
CN207	112
CN208	115
CN209	106

SYMBOL NO.	INDEX NO.
CN210	114
CN211	113
CN212	104
CN213	103
CN214	103
CN215	103
CN216	117
CN217	108
CN218	105
CN219	----

SYMBOL NO.	INDEX NO.
CN258	110
CN259	109

DA

SYMBOL NO.	INDEX NO.
DA101	133
DA102	126
DA103	127
DA104	126
DA105	126
DA106	126
DA107	126
DA108	133

DIODE

SYMBOL NO.	INDEX NO.
D101	128
D102	130
D103	131

FILTER

SYMBOL NO.	INDEX NO.
FIL101	174

IC

SYMBOL NO.	INDEX NO.
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IC109	139
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IC131	140

OSC

SYMBOL NO.	INDEX NO.
OSC101	168

Q

SYMBOL NO.	INDEX NO.
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Q104	136
Q105	136
Q107	136
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Q110	120
Q111	136
Q112	141

SYMBOL NO.	INDEX NO.
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Q118	120
Q119	121
Q120	124
Q121	136

JP

SYMBOL NO.	INDEX NO.
JP102	201
JP103	201
JP104	201

RESISTOR

SYMBOL NO.	INDEX NO.
R103	192
R104	183
R125	197
R126	197
R127	197
R128	183
R129	184
R130	200

SYMBOL NO.	INDEX NO.
R131	182
R132	184
R133	182
R134	183
R135	183
R136	183
R137	177
R138	183
R139	184
R140	181

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RESISTOR

SYMBOL NO.	INDEX NO.
R141	181
R142	183
R143	185
R144	181
R145	181
R146	181
R147	203
R148	181
R149	183
R150	----
R151	205
R152	183
R153	184
R154	181
R155	181
R156	184
R157	176
R158	184
R159	178
R160	183
R161	194
R162	191
R163	169
R164	184
R165	178
R166	178
R167	190
R168	194
R169	196
R170	178
R171	178
R172	189
R173	183
R174	204
R175	190
R176	202
R177	183
R178	202
R179	202
R180	202
R181	202
R182	183
R183	189
R184	204
R185	202
R186	183
R187	196
R188	183
R189	204
R190	194
R191	190
R192	184
R193	184
R194	194
R195	196
R196	188
R197	198
R198	177
R199	198
R200	188
R201	183
R202	194
R203	188
R204	188
R205	184
R206	183
R207	----
R208	----
R209	183
R210	184

RESISTOR

SYMBOL NO.	INDEX NO.
R211	----
R212	----
R213	186
R214	184
R215	----
R216	----
R217	183
R218	183
R219	194
R220	----
R221	200
R222	183
R223	184
R224	184
R225	184
R226	184
R227	185
R228	188
R229	194
R230	188
R231	185
R232	184
R233	----
R234	183
R235	183
R236	207
R237	206
R238	195
R239	183
R240	207
R241	183
R242	184
R243	184
R244	184
R245	183
R246	183
R247	183
R248	184
R249	----
R250	----
R251	184
R252	184
R253	184
R254	194
R255	184
R256	184
R257	183
R258	183
R259	184
R260	184
R261	184
R262	184
R263	183
R264	183
R265	189
R266	182
R267	183
R268	183
R269	183
R270	183
R271	183
R272	192
R273	184
R274	187
R275	193
R276	179
R277	180
R278	183
R279	183

RN

SYMBOL NO.	INDEX NO.
RN101	171
RN102	171
RN103	170
RN104	170
RN105	171
RN106	171
RN107	170
RN108	170
RN109	171
RN110	171

SYMBOL NO.	INDEX NO.
RN111	171
RN112	171
RN113	171
RN114	171
RN115	171
RN116	170
RN117	171
RN118	171
RN119	171
RN120	171

SYMBOL NO.	INDEX NO.
RN121	171
RN122	171
RN123	171
RN124	171
RN125	171
RN126	171
RN127	173
RN128	171
RN129	171
RN130	171

SYMBOL NO.	INDEX NO.
RN131	171
RN132	171
RN133	171
RN134	171
RN135	171
RN136	170
RN137	171
RN138	172
RN139	172
RN140	170

SYMBOL NO.	INDEX NO.
RN141	170
RN142	170

SWITH

SYMBOL NO.	INDEX NO.
SW101	119

TB

SYMBOL NO.	INDEX NO.
TB101	101
TB102	118

V

SYMBOL NO.	INDEX NO.
V1	135
V2	135

ZD

SYMBOL NO.	INDEX NO.
ZD101	132
ZD102	132
ZD103	132
ZD104	129
ZD105	129
ZD106	134
ZD107	132
ZD108	132

66.I/O Board (A229)

Index No.	Part No.	Description	Q'ty Per Assembly
*	A229 5120	I/O Board	
1	A232 5355	IC - Gatex	
2	A232 5371	MPU CSS	
101	1102 2452	Terminal Block - 3p	
102	1102 5305	Connector - 6P	
103	1102 5476	Modular Cord - 6p/6p	
104	1102 6297	Connector - 4P	
105	1102 6302	Connector - 9P	
106	1102 6304	Connector - 11P	
107	1102 6305	Connector - 12P	
108	1102 6313	Connector - 6P	
109	1102 6315	Connector - 8P	
110	1102 6316	Connector - 9P	
111	1102 6397	Box Header	
112	1102 6398	Connector - 2P	
113	1102 6401	Connector - 26P	
114	1102 6403	Connector - 30P	
115	1102 6515	Connector - 34P	
116	1102 7729	Connector - DX10G1M-50SE	
117	1103 1317	Connector	
118	1103 1878	Receptacle - 9067	
119	1204 1537	Dip Switch	
120	1400 0542	Transistor Array - FN1L3M	
121	1400 0728	Transistor - 2SD2170	
122	1401 0298	Transistor - 2SC2712Y	
123	1401 0444	Transistor - 2SD1614XL	
124	1401 0972	Transistor-2sb1260	
125	1401 0986	Transistor - UPA1552H	
126	1402 0478	Diode - 1SS226TE85L	
127	1402 0492	Diode-array - DICA20	
128	1402 0513	Diode - EK03	
129	1402 0688	Diode	
130	1402 0942	Diode - 1SS193	
131	1402 0986	Diode - RB100A	
132	1402 1037	Diode - U1ZB12	
133	1402 1122	Diode - MA159A	
134	1402 1323	Zener Diode - UDZ5.6B	
135	1404 0238	Serge Absorber 22V 0.6J	
136	1407 1535	IC - TD62308AP	
137	1407 1596	TTLIC - SN74LS14NS	
138	1407 1600	TTLIC - SN74LS244NS	
139	1407 2187	TTLIC - SN74LS07NS	
140	1407 2218	TTLIC - SN74LS06NS	
141	1407 2219	IC - TD62003AP	
142	1407 2261	IC - NJM2902M	
143	1407 3281	IC - TC74HCU04AF	
144	1407 3290	IC - TC74HC02AF	
145	1407 4114	IC - SN751177	
146	1407 4775	IC - MC14066BF	
147	1402 0688	Diode	
148	1402 0942	Diode - 1SS193	
149	1402 0986	Diode - RB100A	
150	1402 1037	Diode - U1ZB12	

Index No.	Part No.	Description	Q'ty Per Assembly
151	1402 1122	Diode - MA159A	
152	1402 1323	Zener Diode - UDZ5.6B	
153	1404 0238	Serge Absorber 22V 0.6J	
154	1407 1535	IC - TD62308AP	
155	1407 1596	TTLIC - SN74LS14NS	
156	1407 1600	TTLIC - SN74LS244NS	
157	1407 2187	TTLIC - SN74LS07NS	
158	1407 2218	TTLIC - SN74LS06NS	
159	1407 2219	IC - TD62003AP	
160	1407 2261	IC - NJM2902M	
161	1407 3281	IC - TC74HCU04AF	
162	1407 3290	IC - TC74HC02AF	
163	1407 4114	IC - SN751177	
164	1407 4775	IC - MC14066BF	
165	1408 0826	IC - TA8428K	
166	1408 0877	Comparator - LM339NS	
167	1408 1206	Transistor-array - TD62M4700F	
168	1503 0261	Oscillator - 9.8304MHZ	
169	1601 5319	Resistor-3.9 Ω ±5% 2W	
170	1601 7800	Resistor Array - 1KΩ ±5% 1/16W	
171	1601 7801	Resistor Array - 10KΩ ±5% 1/16W	
172	1601 7807	Registor Array -3.3k Ω -5% 1/16w	
173	1601 7848	Resistor - 220 Ω ±5% 1/16W	
174	1602 7029	Noise Filter - 22000pF	
175	1605 0343	Capacitor - 30pF ±5% 50V	
176	1630 1101	Resistor - 100 Ω 1/4W ±5%	
177	1630 1121	Resistor - 120Ω±5% 1/8W	
178	1630 1151	Resistor - 150 Ω ±5% 1/4W	
179	1630 1392	Resistor - 3.9K Ω ±5% 1/4W	
180	1630 1471	Registor - 470 Ω ±5% 1/4w	
181	1630 2221	Resistor - 220 Ω	
182	1630 3100	Resistor - 10 Ω ±5% 1/10W	
183	1630 3102	Resistor - 1KΩ 1/10W ±5%	
184	1630 3103	Resistor - 10KΩ 1/10W ±5%	
185	1630 3104	Resistor - 100K Ω 1/10W ±5%	
186	1630 3106	Resistor - 10M Ω ±5% 1/10W	
187	1630 3152	Resistor - 1.5kΩ - 1/10W	
188	1630 3154	Resistor - 150K 0HM ±5% 1/10W	
189	1630 3161	Registor - 160Ω 1/10w ±5%	
190	1630 3222	Resistor - 2.2KΩ 1/10W ±5%	
191	1630 3223	Resistor - 22kΩ - 1/10W	
192	1630 3332	Resistor - 3.3KΩ 1/10W ±5%	
193	1630 3362	Resistor - 3.6K Ω ±5% 1/10W	
194	1630 3472	Resistor - 4.7KΩ 1/10W ±5%	
195	1630 3473	Resistor - 47KΩ 1/10W ±5%	
196	1630 3562	Resistor - 5.6K Ω +5% 1/10W	
197	1630 3680	Resistor - 68 Ω ±5% 1/10W	
198	1630 3752	Resistor - 7.5K Ω ±5% 1/10W	
199	1630 3821	Resistor - 820 Ω ±5% 1/10W	
200	1630 3910	Resistor - 91 Ω ±5% 1/10W	
201	1631 0000	Resistor - 0Ω 1/4W	
202	1633 1003	Resistor - 100K Ω ±1% 1/10W	
203	1633 1102	Resistor-11k Ω ±1% 1/10W	
204	1633 1403	Resistor - 140K Ω ±1% 1/10W	
205	1633 1542	Resistor - 15.4K Ω ±1%	
206	1633 4700	Registor - 470 Ω - ±1% - 1/10W	
207	1633 5231	Resistor - 5.23K Ω ±1% 1/10W	
208	1640 5100	Capacitor - 10µF+20% 35V	
209	1640 5101	Capacitor - 100µF±20% 50V	
210	1640 5470	Capacitor - 47µF±20% 50V	
211	1660 1100	Capacitor - 10pF 50V	
212	1660 3101	Capacitor - 100pF 50V	
213	1660 3471	Capacitor - 470pF 50V	
214	1660 5472	Capacitor - 4700pF 50V	
215	1660 7103	Capacitor - 10000pF 50V	
216	1660 7104	Capacitor - 100000pF 50V	
217	1660 9104	C - 0.1µF25V	

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BAT

SYMBOL NO.	INDEX NO.
BAT101	117

CAPACITOR

SYMBOL NO.	INDEX NO.
C101	215
C102	215
C103	215
C104	217
C105	205
C106	205
C107	205
C108	205
C109	210
C110	----

SYMBOL NO.	INDEX NO.
C111	217
C112	217
C113	204
C114	217
C115	213
C116	162
C117	204
C118	204
C119	215
C120	213

SYMBOL NO.	INDEX NO.
C121	164
C122	164
C123	217
C124	217
C125	161
C126	210
C127	203
C128	209
C129	----
C130	209

SYMBOL NO.	INDEX NO.
C131	209
C132	209
C133	213
C134	215
C135	205
C136	205
C137	215
C138	205
C139	213
C140	205

SYMBOL NO.	INDEX NO.
C141	215
C142	209
C143	215
C144	217
C145	217
C146	----
C147	217
C148	----
C149	----
C150	205

SYMBOL NO.	INDEX NO.
C151	----
C152	215
C153	217
C154	215
C155	215
C156	215
C157	217
C158	205
C159	217
C160	213

CAPACITOR

SYMBOL NO.	INDEX NO.
C161	217
C162	217
C163	217
C164	210
C165	217
C166	----
C167	217
C168	213
C169	213
C170	215

SYMBOL NO.	INDEX NO.
C171	217
C172	217
C173	217
C174	217
C175	217
C176	217
C177	215
C178	217
C179	217
C180	213

SYMBOL NO.	INDEX NO.
C181	215
C182	217
C183	217
C184	215
C185	217
C186	210
C187	----
C188	217
C189	211
C190	213

SYMBOL NO.	INDEX NO.
C191	210
C192	215
C193	----
C194	217
C195	----
C196	215
C197	213
C198	215
C199	163
C200	217

SYMBOL NO.	INDEX NO.
C201	217
C202	217
C203	217
C204	217
C205	217
C206	215
C207	217
C208	----
C209	217
C210	217

SYMBOL NO.	INDEX NO.
C211	217
C212	208
C213	208
C214	215
C215	217
C216	217
C217	215
C218	213
C219	213
C220	215

SYMBOL NO.	INDEX NO.
C221	217
C222	----
C223	209
C224	213
C225	215
C226	209
C227	215
C228	217
C229	217
C230	217

67.SBICU Board (A229)

CAPACITOR

SYMBOL NO.	INDEX NO.
C231	217
C232	205
C233	205
C234	217
C235	213
C236	213
C237	217
C238	211
C239	213
C240	213

SYMBOL NO.	INDEX NO.
C241	217
C242	215
C243	215
C244	----
C245	----
C246	217
C247	217
C248	217
C249	209
C250	217

SYMBOL NO.	INDEX NO.
C251	----
C252	209
C253	209
C254	215
C255	217
C256	209
C257	----
C258	----
C259	209
C260	209

SYMBOL NO.	INDEX NO.
C261	205
C262	213
C263	213
C264	209
C265	209
C266	217
C267	209
C268	----
C269	----
C270	213

SYMBOL NO.	INDEX NO.
C271	209
C272	----
C273	206
C274	----
C275	205
C276	217
C277	205
C278	----
C279	205
C280	205

SYMBOL NO.	INDEX NO.
C281	205
C282	210
C283	205
C284	205
C285	215
C286	217
C287	205
C288	206
C289	210
C290	213

SYMBOL NO.	INDEX NO.
C291	----
C292	205
C293	217
C294	217
C295	206
C296	206
C297	206
C298	206
C299	206
C300	206

CAPACITOR

SYMBOL NO.	INDEX NO.
C301	206
C302	206
C303	206
C304	206
C305	206
C306	206
C307	206
C308	206
C309	206
C310	206

SYMBOL NO.	INDEX NO.
C311	206
C312	206
C313	----
C314	217
C315	207
C316	217
C317	217
C318	217
C319	206
C320	206

SYMBOL NO.	INDEX NO.
C321	217
C322	217
C323	212
C324	211
C350	215

SYMBOL NO.	INDEX NO.
C351	215
C352	215
C353	215
C354	215
C355	215
C356	217
C357	----
C358	215
C359	205
C360	205

SYMBOL NO.	INDEX NO.
C361	205
C362	205
C363	217
C364	209
C365	206
C366	215
C367	215
C368	215
C369	215
C370	215

SYMBOL NO.	INDEX NO.
C371	215
C372	215
C373	215
C374	----
C375	217
C376	217
C377	216
C378	209
C379	206
C380	209

SYMBOL NO.	INDEX NO.
C381	206
C382	214

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CONNECTOR

SYMBOL NO.	INDEX NO.
CN301	111
CN302	114
CN303	109
CN304	113
CN305	107
CN306	113
CN307	105
CN308	113
CN309	103
CN310	102

SYMBOL NO.	INDEX NO.
CN311	109
CN312	108
CN313	----
CN314	110
CN315	106
CN316	112
CN317	113
CN318	104
CN319	107

FILTER

SYMBOL NO.	INDEX NO.
FIL101	166
FIL102	166
FIL103	168
FIL104	166
FIL105	166
FIL106	166
FIL107	166
FIL108	166
FIL109	166
FIL110	166

SYMBOL NO.	INDEX NO.
FIL111	166
FIL112	166
FIL113	166
FIL114	167
FIL115	165
FIL116	165
FIL117	167
FIL118	166
FIL119	169
FIL120	169

SYMBOL NO.	INDEX NO.
FIL121	170
FIL122	169
FIL123	169
FIL124	171
FIL125	170
FIL126	170
FIL127	172

SYMBOL NO.	INDEX NO.
DA101	120
DA102	120

DIODE

SYMBOL NO.	INDEX NO.
D101	119

IC

SYMBOL NO.	INDEX NO.
IC101	----
IC102	139
IC103	219
IC104	2
IC105	----
IC106	4
IC107	----
IC108	----
IC109	----
IC110	219

IC

SYMBOL NO.	INDEX NO.
IC111	141
IC112	----
IC113	219
IC114	219
IC115	3
IC116	131
IC117	150
IC118	----
IC119	146
IC120	219

SYMBOL NO.	INDEX NO.
IC121	219
IC122	143
IC123	----
IC124	----
IC125	----
IC126	----
IC127	6
IC128	----
IC129	----
IC130	----

SYMBOL NO.	INDEX NO.
IC131	137
IC132	137
IC133	137
IC134	137
IC135	132
IC136	126
IC137	129
IC138	129
IC139	----
IC140	140

SYMBOL NO.	INDEX NO.
IC141	139
IC142	131
IC143	137
IC144	131
IC145	----
IC146	124
IC147	----
IC148	131
IC149	131
IC150	----

SYMBOL NO.	INDEX NO.
IC151	133
IC152	147
IC153	125
IC154	1
IC155	138
IC156	130
IC157	130
IC158	136
IC159	5
(Socket)	116

SYMBOL NO.	INDEX NO.
IC160	143
IC161	140
IC164	134
IC165	7
(Socket)	115
IC166	218
IC167	218
IC168	149
IC169	149
IC170	128

SYMBOL NO.	INDEX NO.
IC171	----
IC172	145
IC173	135
IC174	142
IC175	127
IC176	----
IC177	148
IC178	----
IC179	144

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JP

SYMBOL NO.	INDEX NO.
JP102	200
JP103	200
JP104	200
JP105	200
JP106	200
JP107	200
JP108	200
JP109	200
JP110	200
JP111	200

SYMBOL NO.	INDEX NO.
JP112	200
JP116	200
JP118	200
JP123	200
JP124	200
JP125	200
JP126	200
JP130	200
JP131	200
JP132	200

LED

SYMBOL NO.	INDEX NO.
LED102	122
LED103	122
LED104	123
LED105	123
LED106	122

OSC

SYMBOL NO.	INDEX NO.
OSC102	154
OSC104	153
OSC106	156
OSC107	152
OSC108	152

Q

SYMBOL NO.	INDEX NO.
Q102	118
Q103	118

RESISTOR

SYMBOL NO.	INDEX NO.
R101	187
R102	177
R103	176
R104	176
R105	----
R106	----
R107	187
R108	187
R109	----
R110	187

SYMBOL NO.	INDEX NO.
R111	187
R112	187
R113	187
R114	187
R115	187
R116	187
R117	187
R118	187
R119	187
R120	----

RESISTOR

SYMBOL NO.	INDEX NO.
R121	181
R122	----
R123	----
R124	176
R125	176
R126	176
R127	176
R128	176
R129	176
R130	----

SYMBOL NO.	INDEX NO.
R131	187
R132	187
R133	----
R134	----
R135	----
R136	----
R137	187
R138	187
R139	187
R140	187

SYMBOL NO.	INDEX NO.
R141	187
R142	187
R143	187
R144	187
R145	187
R146	187
R147	176
R148	187
R149	187
R150	177

SYMBOL NO.	INDEX NO.
R151	188
R152	187
R153	187
R154	187
R155	187
R156	187
R157	187
R158	187
R159	179
R160	187

SYMBOL NO.	INDEX NO.
R161	177
R162	187
C163	176
R164	187
R165	187
R166	187
R167	187
R168	187
R169	187
R170	187

SYMBOL NO.	INDEX NO.
R171	176
R172	197
R173	197
R174	187
R175	----
R176	----
R177	194
R178	194
R179	----
R180	187

SYMBOL NO.	INDEX NO.
R181	187
R182	187
R183	187
R184	197
R185	----
R186	176
R187	187
R188	----
R189	187
R190	187

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RESISTOR

SYMBOL NO.	INDEX NO.
R191	187
R192	187
R193	187
R194	187
R195	187
R196	187
R197	187
R198	187
R199	187
R200	187

SYMBOL NO.	INDEX NO.
R201	187
R202	187
R203	187
R204	187
R205	176
R206	187
R207	187
R208	187
R209	198
R210	----

SYMBOL NO.	INDEX NO.
R211	----
R212	----
R213	----
R214	176
R215	177
R216	193
R217	177
R218	185
R219	192
R220	176

SYMBOL NO.	INDEX NO.
R221	176
R222	----
R223	----
R224	176
R225	176
R226	192
R227	----
R228	----
R229	----
R230	176

SYMBOL NO.	INDEX NO.
R231	----
R232	----
R233	----
R234	----
R235	177
R236	188
R237	188
R238	177
R239	188
R240	177

SYMBOL NO.	INDEX NO.
R241	177
R242	188
R243	177
R244	188
R245	177
R246	192
R247	177
R248	192
R249	177
R250	177

SYMBOL NO.	INDEX NO.
R251	187
R252	192
R253	177
R254	176
R255	----
R256	177
R257	182
R258	177
R259	----
R260	176

RESISTOR

SYMBOL NO.	INDEX NO.
R261	----
R262	193
R263	177
R264	----
R265	187
R266	176
R267	197
R268	176
R269	176
R270	----

SYMBOL NO.	INDEX NO.
R271	193
R272	176
R273	190
R274	197
R275	187
R276	186
R277	176
R278	187
R279	184
R280	187

SYMBOL NO.	INDEX NO.
R281	177
R282	174
R283	187
R284	187
R285	187
R286	187
R287	176
R288	----
R289	187
R290	193

SYMBOL NO.	INDEX NO.
R291	187
R292	176
R293	187
R294	173
R295	176
R296	176
R297	187
R298	187
R299	187
R300	187

SYMBOL NO.	INDEX NO.
R301	184
R302	187
R303	187
R304	177
R305	176
R306	187
R307	187
R308	177
R309	192
R310	----

SYMBOL NO.	INDEX NO.
R311	187
R312	201
R313	177
R314	202
R315	192
R316	192
R317	189
R318	179
R319	----
R320	176

SYMBOL NO.	INDEX NO.
R321	187
R322	----
R323	187
R324	175
R325	192
R326	----
R327	184
R328	177
R329	177
R330	192

67.SBICU Board (A229)

RESISTOR

SYMBOL NO.	INDEX NO.
R331	----
R332	187
R333	197
R334	187
R335	177
R336	176
R337	177
R338	----
R339	188
R340	176

SYMBOL NO.	INDEX NO.
R341	197
R342	176
R343	177
R344	177
R345	187
R346	177
R347	197
R348	187
R349	187
R350	197

SYMBOL NO.	INDEX NO.
R351	----
R352	186
R353	193
R354	174
R355	197
R356	186
R357	187
R358	176
R359	176
R360	174

SYMBOL NO.	INDEX NO.
R361	174
R365	174
R366	177
R368	174
R371	174
R372	174
R378	177
R379	177
R380	178

SYMBOL NO.	INDEX NO.
R381	188
R382	188
R383	188
R384	188
R385	188
R386	188
R392	174
R407	187

SYMBOL NO.	INDEX NO.
R411	176
R412	174
R413	----
R414	176
R415	174
R416	----
R417	----
R418	176
R418	----
R420	176

SYMBOL NO.	INDEX NO.
R421	187
R422	----
R423	176
R424	177
R425	----
R426	176
R427	----
R428	176
R429	187
R430	----

RESISTOR

SYMBOL NO.	INDEX NO.
R433	177
R438	176
R447	176
R448	176
R449	176
R450	176

SYMBOL NO.	INDEX NO.
R451	176
R452	----
R453	176
R454	187
R455	187
R456	176
R457	----
R458	177
R459	187
R460	188

SYMBOL NO.	INDEX NO.
R461	187
R462	188
R463	188
R464	184
R465	184
R466	----
R467	----
R468	184
R469	177
R470	177

SYMBOL NO.	INDEX NO.
R471	177
R472	177
R473	195
R474	----
R475	177
R476	185
R477	199
R478	199
R479	199
R480	199

SYMBOL NO.	INDEX NO.
R481	199
R482	199
R483	177
R484	199
R485	177
R486	177
R487	177
R488	177
R489	177
R490	177

SYMBOL NO.	INDEX NO.
C 491	178
C 492	177
C 493	177
C 494	177
C 495	177
C 496	191
C 497	191
C 498	187
C 499	177
C 500	176

SYMBOL NO.	INDEX NO.
C 501	176
C 502	176
C 503	176
C 504	176
C 505	176
C 506	176
C 507	176
C 508	176
C 509	176
C 510	176

67.SBICU Board (A229)

RESISTOR

SYMBOL NO.	INDEX NO.
R511	177
R512	177
R513	177
R514	176
R515	177
R516	----
R517	----
R518	177
R519	183
R520	----

SYMBOL NO.	INDEX NO.
R521	----
R522	177
R523	188
R524	177
R525	----
R526	184
R527	197
R528	176
R529	186
R530	174

SYMBOL NO.	INDEX NO.
R531	176
R532	176
R533	176
R534	----
R535	199
R536	199
R537	180
R538	----
R539	187
R540	187

SYMBOL NO.	INDEX NO.
R541	198
R542	187
R543	198
R544	187
R545	187
R546	177
R547	177
R548	177
R549	187
R550	187

SYMBOL NO.	INDEX NO.
R551	192
R552	177
R553	177
R554	196
R555	177
R556	199
R557	199
R558	199
R559	199
R560	199

SYMBOL NO.	INDEX NO.
R561	199
R562	199
R563	199
R564	199
R565	199
R566	199
R567	199
R568	199
R569	199
R570	199

SYMBOL NO.	INDEX NO.
R571	199
R572	199
R573	199
R574	199
R575	----
R576	----
R577	----
R578	187
R579	187
R580	187

RESISTOR

SYMBOL NO.	INDEX NO.
R581	187
R582	187
R583	187
R584	187
R585	187
R586	187
R587	187
R588	187
R589	187
R590	187

SYMBOL NO.	INDEX NO.
R591	187
R592	187
R593	187
R594	187
R595	187
R596	187
R597	199
R598	177
R599	187
R60 0	187

SYMBOL NO.	INDEX NO.
R601	----
R602	182
R603	175
R604	187
R605	187
R606	187
R607	187
R608	187
R609	183
R610	180

SYMBOL NO.	INDEX NO.
R611	187
R612	187
R613	187
R614	187
R615	187
R616	187
R617	187
R618	187
R619	187
R620	187

REG

SYMBOL NO.	INDEX NO.
REG101	151

67.SBICU Board (A229)

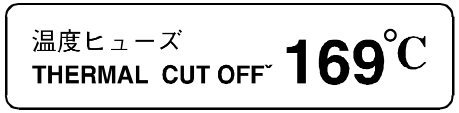
Index No.	Part No.	Description	Q'ty Per Assembly
*	A229 7530	SBICU Board - 120V	1
*	A229 7550	SBICU Board - 230V	1
1	A229 5109	IC Sscanner Control	1
2	A229 5221	IC - SIPU UPD82090GD	1
3	A232 5251	IC - IMAC RF5C289	1
4	A232 5350	IC - HG71C103FD	1
5	A691 5171	IC - HS6433522P19P	1
6	A691 5250	ID - FBTC M65793FP	1
7	A229 9099	NVRAM - Minus Counter	1
101	1102 2452	Terminal Block - 3P	
102	1102 2854	Connector - 40P	
103	1102 4203	CT Header - 4P	
104	1102 6297	Connector - 4P	
105	1102 6298	Connector - 5P	
106	1102 6299	Connector - 6P	
107	1102 6300	Connector - 7P	
108	1102 6301	Connector - 8P	
109	1102 6304	Connector - 11P	
110	1102 6310	Connector - 3P	
111	1102 6592	Connector - 8P	
112	1102 7132	Card Slot - 68p	
113	1102 7389	Connector - FH12-50S-0.5SV	
114	1102 7729	Connector - DX10G1M-50SE	
115	1104 0588	Dip Socket - 28p	
116	1104 0769	IC Socket	
117	1206 0054	Lithium Cell - CR2032-1HS	

Index No.	Part No.	Description	Q'ty Per Assembly
118	1400 0392	Transistor - DTC114EK	
119	1402 0477	Silicon Diode - 1SS187	
120	1402 0478	Diode - 1SS226TE85L	
121	1402 1111	Diode - HZM5.1NB2	
122	1403 0828	Diode - SEC1901C	
123	1403 0829	Diode - SEC1201C	
124	1407 1596	TTLIC - SN74LS14NS	
125	1407 1600	TTLIC - SN74LS244NS	
126	1407 2052	TTLIC - SN74LS74ANS	
127	1407 2129	TTLIC - 74F04SJ	
128	1407 2137	IC - 74F138SJ	
129	1407 2143	TTLIC - 74F244SJ	
130	1407 2144	TTLIC - 74F245SJ	
131	1407 2187	TTLIC - SN74LS07NS	
132	1407 2218	TTLIC - SN74LS06NS	
133	1407 3021	TTL SN74ALS139NS	
134	1407 3202	Cmosic - TC74HC00AF	
135	1407 3206	IC - TC7S32F	
136	1407 3411	SN74ALS541NS	
137	1407 3825	ALS-TTL SN74ALS244A-1NS	
138	1407 4044	IC - 74ACT14	
139	1407 4322	IC - TD74ABT374F	
140	1407 4323	TTL Td74abt244f	
141	1407 4332	IC - UPD42280GU-30	
142	1407 4648	IC - C7S02FU	
143	1407 4836	IC - RL5MF007	
144	1407 4840	IC - TC7SH04FU	
145	1407 4856	IC - TC7S08FU	
146	1407 4959	IC - MC68334GCFC20	
147	1407 4962	IC - RTC-4563SB	
148	1407 5011	IC - TC7W74FU	
149	1407 5039	IC - MBM29F016A-90pFTN	
150	1408 0575	IC - M51957BFP	
151	1408 1266	Regulator - LT1086CM-3.3	
152	1503 0239	Oscillator - HC-49/U-S 10MHZ	

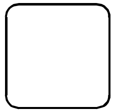
Index No.	Part No.	Description	Q'ty Per Assembly
153	1503 0460	Oscillator - 32.768KHZ	
154	1503 0784	Osillater - Ma-406 19.6608mhz	
155	1503 0810	Osicllator - 28mhz	
156	1601 7800	Resistor Array - 1KΩ ±5% 1/16W	
157	1601 7801	Resistor Array - 10KΩ ±5% 1/16W	
158	1601 7805	Resistor Array - 33 Ω ±5% 1/16W	
159	1601 7807	Registor Array -3.3k Ω -5% 1/16W	
160	1601 7808	Registor - 4.7kΩ ±5% 1/16W	
161	1604 2601	Condensor - 47µF±20% 25V	
162	1604 4333	Capacitor - 100µF±20% 10V	
163	1605 0577	Capacitor - 0.33µF+80-20%	
164	1605 0769	Capacitor - 20pF ±5% 50V	
165	1607 0280	Inductor - BLM41	
166	1607 0732	Noise Filter - AEF321825-470	
167	1607 0758	Filter - DSS710D223A12-22	
168	1607 0927	Filter - ACF321825-220	
169	1607 1018	Filter - ACB1608H-120	
170	1607 1040	Filter - ACB1608M-120	
171	1607 1041	Filter - ACB1608M-300	
172	1607 1042	Filter - ACB1608M-600	
173	1630 3331	Resistor - 330 Ω ±5% 1/10W	
174	1630 4100	Resistor - 10 Ω ±5% 1/16W	
175	1630 4101	Resistor - 100 Ω ±5% 1/16W	
176	1630 4102	Resistor - 1.0KΩ ±5% 1/16W	
177	1630 4103	Resistor - 10KΩ ±5% 1/16W	
178	1630 4104	Resistor - 100 Ω ±5% 1/16W	
179	1630 4106	Resistor -10m Ω ±5% 1/16W	
180	1630 4121	Resistor - 120 Ω ±5% 1/16W	
181	1630 4150	Resistor - 15Ω ±5.00%,1/16W	
182	1630 4151	Registor - 150 Ω ±5% 1/16W	
183	1630 4181	Resistor - 180 Ω ±5% 1/16W	
184	1630 4222	Registor - 2.2k Ω - ±5%	
185	1630 4223	Registor - 22k Ω - ±5% - 1/16W	
186	1630 4272	Registor - 2.7k Ω - ±5% - 1/16W	
187	1630 4330	Resistor - 33 Ω ±5% 1/8W	
188	1630 4332	Resistor - 3.3K Ω ±5% 1/16W	
189	1630 4334	Resistor - 330K Ω ±5% 1/16W	
190	1630 4391	Resistor -390Ω ±5.00% 1/16W	
191	1630 4471	Resistor - 470 Ω ±5% 1/16W	
192	1630 4472	Resistor - 4.7KΩ ±5% 1/16W	
193	1630 4511	Registor - 510 Ω - ±5% - 1/16W	
194	1630 4514	Resistor 510kΩ ±5.00% 1/16W	
195	1630 4562	Registor - 5.6k Ω - ±5% - 1/16W	
196	1630 4563	Resistor - 56KΩ ±5% 1/16W	
197	1630 4680	Resistor - 68 Ω ±5% 1/16W	
198	1630 4751	Resistor - 50Ω±5.00% 1/16W	
199	1630 4820	Resistor - 82 Ω ±5% 1/16W	
200	1634 0000	Registor - 0Ω - 1/16W	
201	1634 1002	Resistor - 10 Ω ±5% 1/16W	
202	1634 3921	Resistor - 3.92KΩ ±1% 1/1	
203	1640 5470	Capacitor - 47µF±20% 50V	
204	1644 0470	Capacitor - 47µF±20% 10V	
205	1660 2101	Capacitor - 100pF - ±10% - 50V	
206	1660 2150	Capacitor - 15pF ±5% 50V	
207	1660 2151	Capacitor - 150pF ±20% 35V	
208	1660 2220	Capacitor - 22pF ±20% 35V	
209	1660 2330	Capacitor - 33pF - ±5% - 50V	
210	1660 2470	Capacitor - 47pF ±5% 50V	
211	1660 2471	Capacitor - 470pF - ±5% - 50V	
212	1660 2820	Capacitor - 82pF ±5% 50V	
213	1660 4102	Capacitor - 1000pF ±10% 50V	
214	1660 5472	Capacitor - 4700pF 50V	
215	1660 6103	Capacitor - 10000pF - +80%-20%, 50V	
216	1660 6223	Capacitor 22000pF +80 -20% 50V	
217	1660 8104	Capacitor - 0.1µF+80-20% 25V	
218	1902 0037	IC - 4M X8 70NS G1	
219	1903 0013	RAM 16M 1MX16 60NS	

68.Decal And Document (A229)

1


温度ヒューズ
THERMAL CUT OFF
169℃

2



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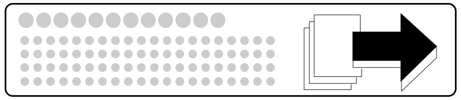
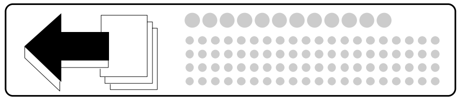


4



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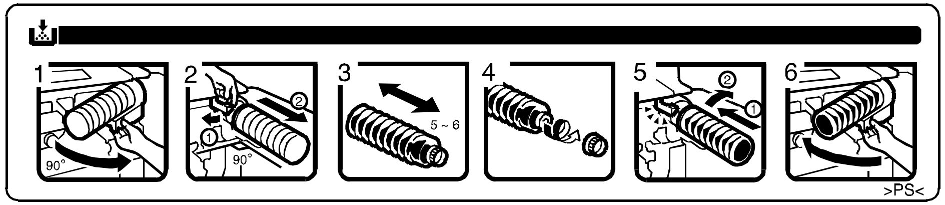
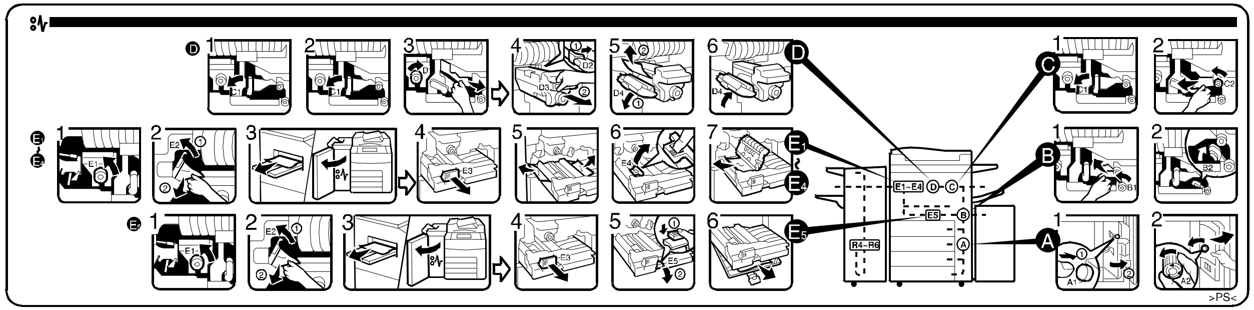
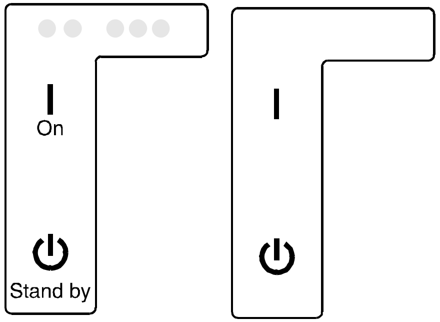

1
90°
2
①
②
90°
3
5～6
4
5
①
②
6
>PS<

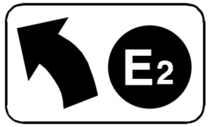
6


D
1
2
3
4
5
6
E
1
2
3
4
5
6
7
1
2
3
4
5
6
E1~E4
D
C
B
A
E5
R4~R6
C
1
2
B
1
2
A
1
2
>PS<

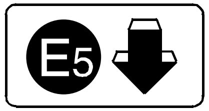
7


I
On
Stand by
I

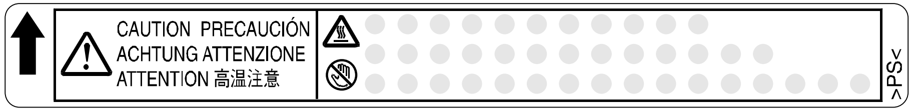
8



9



10


CAUTION PRECAUCIÓN
ACHTUNG ATTENZIONE
ATTENTION 高温注意
>PS<

68.Decal And Document (A229)

11

Face up

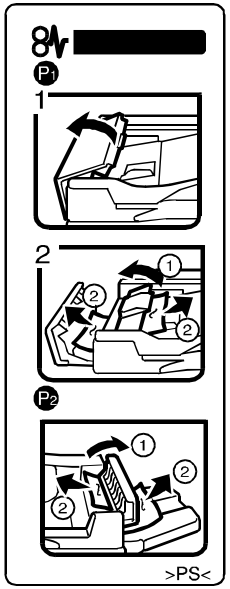
Mit der Schriftseite nach oben

Face imprimée dessus

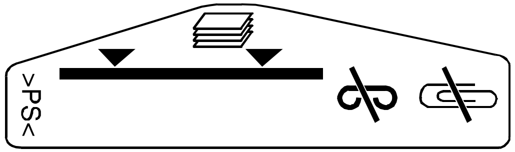
Faccia in su

Boca arriba

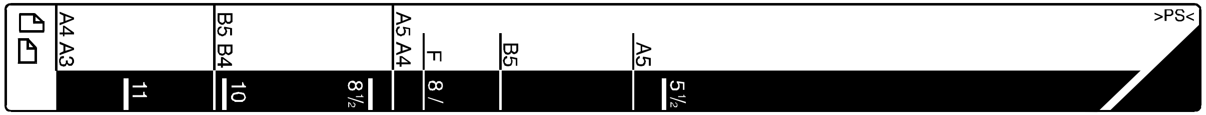
12


P1
1
2
①
②
P2
>PS<

13



14

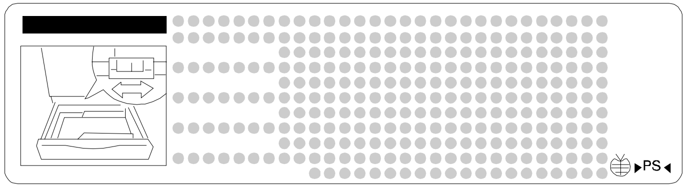

A4 A3
B5 B4
A5 A4
F
B5
A5
11
10
8½
8 /
5½
>PS<

15

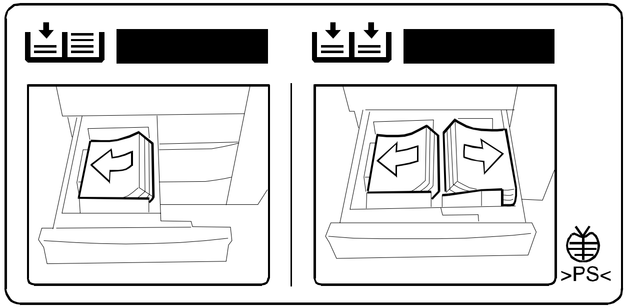
WARNING

- Do not incinerate waste toner.
- Toner dust may cause flashback when exposed to open flame.

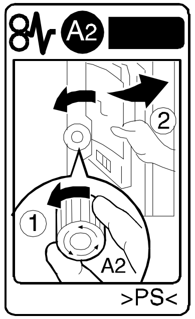
16



17



18



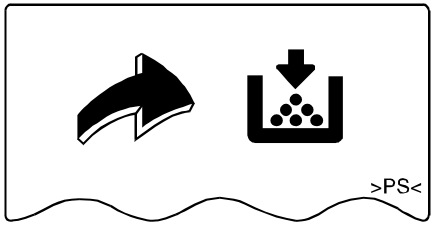
19

B2

20

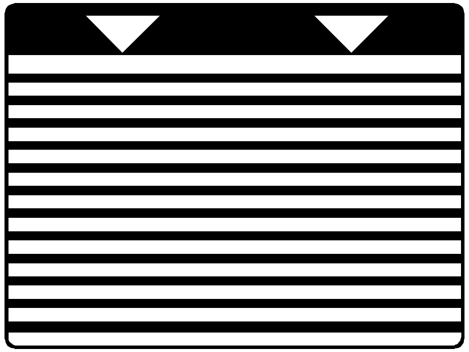
A1

21

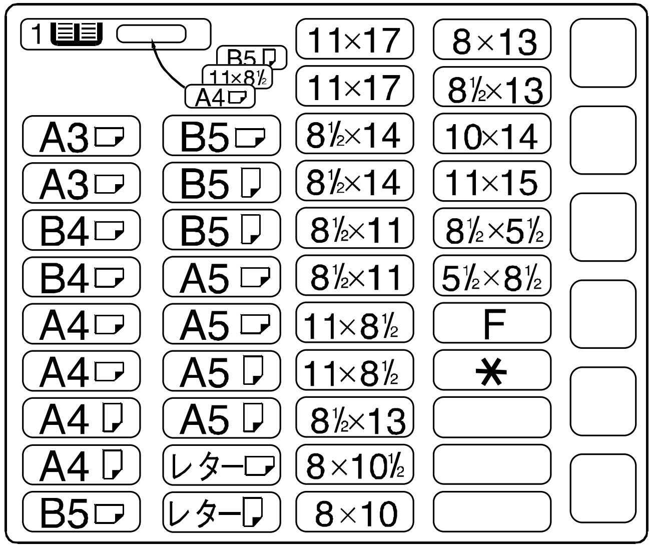


68.Decal And Document (A229)

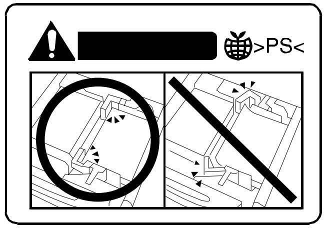
22



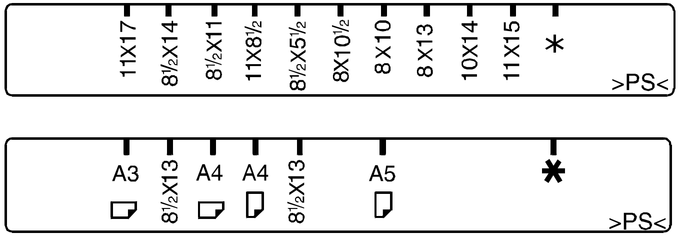
23


1
B5
11×8½
A4
11×17
8×13
11×17
8½×13
A3
B5
8½×14
10×14
A3
B5
8½×14
11×15
B4
B5
8½×11
8½×5½
B4
A5
8½×11
5½×8½
A4
A5
11×8½
F
A4
A5
11×8½
*
A4
A5
8½×13
A4
レター
8×10½
B5
レター
8×10

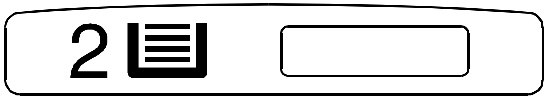
24



25


11X17
8½X14
8½X11
11X8½
8½X5½
8X10½
8X10
8X13
10X14
11X15
*
>PS<
A3
8½X13
A4
A4
8½X13
A5
*
>PS<

26



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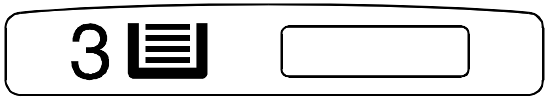
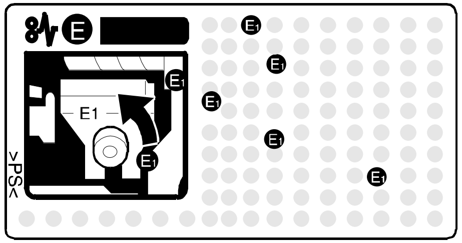


28



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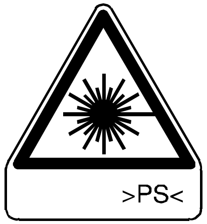

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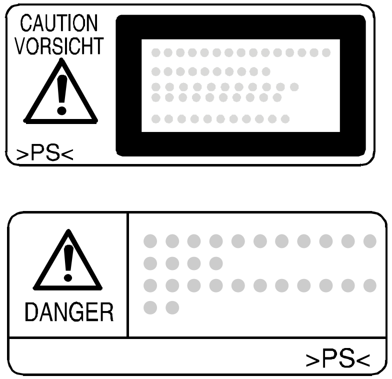
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68.Decal And Document (A229)

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4	A096 6678	Decal - Left Paper Set	1
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6	A229 1350	Decal - Misfeed Removal	1
7	A229 1360	Decal - Main Switch (120V)	1
7	A229 1361	Decal - Main Switch (230V)	1
8	A229 4492	Decal - Exit Guide	1
9	A229 4734	Decal - Guide Plate Lever	1
10	A229 4821	Decal - Warning	1
11	A610 6051	Decal - Document Set	1
12	A806 4311	Decal - Misfeed Removal	1
13	A806 4321	Decal - Original Stack Hight	1
14	A806 4331	Decal - Original Size	1
15	AA00 0059	Decal - Toner Correction	1
16	AA00 0134	Decal - Universal Tray	1
17	AA00 0136	Decal - Left Tandem Tray	1
18	AA00 0540	Decal - Misfeed Removal	1
19	AA00 1213	Decal - B2	1
20	AA00 1326	Decal - A1	1
21	AA00 1394	Decal - Toner Supply	1
22	AA00 2010	Decal - Paper Level	3
23	AA00 2096	Decal - Size Indication	1
24	AA00 2229	Decal - Right Tandem Tray	1
25	AA00 2235	Decal Paper Size - LT	1
25	AA00 2236	Decal Paper Size - A4	1
26	AA00 2238	Decal - Cover No.2	1
27	AA00 2239	Decal - Cover No.3	1
28	AA03 3004	Decal - Misfeed Removal E1	1
29	G020 1917	Decal - LD	1
30	G020 1918	Decal - Laser Diode (230V)	1
30	G020 1920	Decal - Laser Diode (115V)	2
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31	A229 7297	Copy Instructions Guide - LT English (NRG)	1

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31	A229 7260	Copy Instructions Guide - A4 English (INF)	1
31	A229 7208	Copy Instructions Guide - A4 English (RIC)	1
32	A229 7307	Quick Guide - LT English (RIC/NRG)	1
32	A229 7390	Quick Guide - A4 English (NRG/INF)	1
32	A229 7308	Quick Guide - A4 English (RIC)	1
33	A229 8607	System Instructions - LT English (RIC)	1
33	A229 8697	System Instructions - LT English (NRG)	1
33	A229 8690	System Instructions - A4 English (NRG)	1
33	A229 8660	System Instructions - A4 English (INF)	1
33	A229 8608	System Instructions - A4 English (RIC)	1

69.Special Tools (A229)

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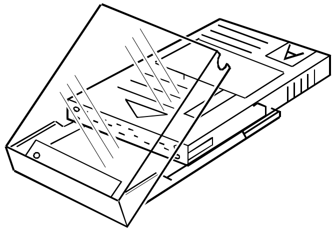

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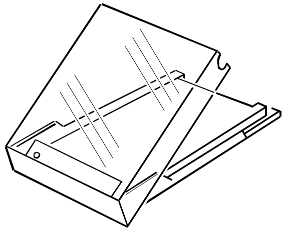

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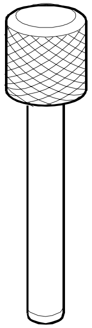

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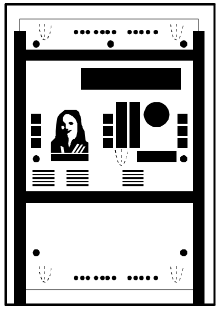

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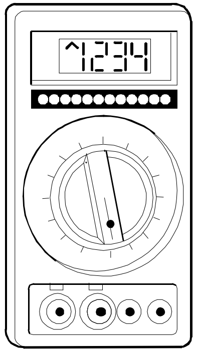

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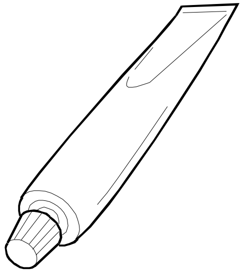

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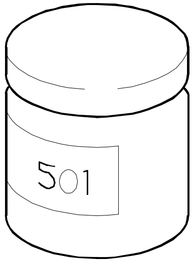

69.Special Tools (A229)

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5	A029 9387	Digital Multimeter - FLUKE87	1
6	G004 9668	Grease:KS660xSHIN-ETSU 1	1
7	5203 9502	Grease 501	1
8	A028 9300	Grease Barrierta JEF 55/2	1

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1105 0328	Harness Clamp - ES-0505	73-106
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1407 2187	TTLIC - SN74LS07NS	147-139
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1407 2218	TTLIC - SN74LS06NS	147-140
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1407 3202	Cmosic - TC74HC00AF	155-134
1407 3206	IC - TC7S32F	155-135
1407 3281	IC - TC74HCU04AF	147-161
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1407 3290	IC - TC74HC02AF	147-162
1407 3411	SN74ALS541NS	155-136
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1407 4044	IC - 74ACT14	155-138
1407 4114	IC - SN751177	147-163
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1407 4648	IC - C7S02FU	155-142
1407 4775	IC - MC14066BF	147-164
1407 4775	IC - MC14066BF	147-146
1407 4836	IC - RL5µF007	155-143
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1601 7801	Resistor Array - 10KΩ ±5% 1/16W	147-171
1601 7801	Resistor Array - 10KΩ ±5% 1/16W	155-157
1601 7805	Resistor Array - 33 Ω ±5% 1/16W	155-158
1601 7807	Registor Array -3.3k Ω -5% 1/16w	147-172
1601 7807	Registor Array -3.3k Ω -5% 1/16W	155-159
1601 7808	Registor - 4.7kΩ ±5% 1/16W	155-160
1601 7848	Resistor - 220 Ω ±5% 1/16W	147-173
1602 7029	Noise Filter - 22000pf	147-174
1604 2601	Condensor - 47µF ±20% 25V	155-161
1604 4333	Capacitor - 100µF ±20% 10V	155-162
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1607 0732	Noise Filter - AEF321825-470	155-166
1607 0758	Filter - DSS710D223A12-22	155-167
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1630 1101	Resistor - 100 Ω 1/4W ±5%	147-176
1630 1121	Resistor - 120Ω±5% 1/8W	147-177
1630 1151	Resistor - 150 Ω ±5% 1/4W	147-178
1630 1392	Resistor - 3.9K Ω ±5% 1/4W	147-179
1630 1471	Registor - 470 Ω ±5% 1/4w	147-180
1630 2221	Resistor - 220 Ω	147-181
1630 3100	Resistor - 10 Ω ±5% 1/10W	147-182
1630 3102	Resistor - 1KΩ 1/10W ±5%	147-183
1630 3103	Resistor - 10KΩ 1/10W ±5%	147-184
1630 3104	Resistor - 100K Ω 1/10W ±5%	147-185
1630 3106	Resistor - 10M Ω ±5% 1/10W	147-186
1630 3152	Resistor - 1.5kΩ - 1/10W	147-187
1630 3154	Resistor - 150K 0HM ±5% 1/10W	147-188
1630 3161	Registor - 160Ω 1/10w ±5%	147-189
1630 3222	Resistor - 2.2KΩ 1/10W ±5%	147-190
1630 3223	Resistor - 22kΩ - 1/10W	147-191
1630 3331	Resistor - 330 Ω ±5% 1/10W	155-173
1630 3332	Resistor - 3.3KΩ 1/10W ±5%	147-192
1630 3362	Resistor - 3.6K Ω ±5% 1/10W	147-193
1630 3472	Resistor - 4.7KΩ 1/10W ±5%	147-194
1630 3473	Resistor - 47KΩ 1/10W ±5%	147-195
1630 3562	Resistor - 5.6K Ω +5% 1/10W	147-196
1630 3680	Resistor - 68 Ω ±5% 1/10W	147-197
1630 3752	Resistor - 7.5K Ω ±5% 1/10W	147-198
1630 3821	Resistor - 820 Ω ±5% 1/10W	147-199
1630 3910	Resistor - 91 Ω ±5% 1/10W	147-200
1630 4100	Resistor - 10 Ω ±5% 1/16W	155-174
1630 4101	Resistor - 100 Ω ±5% 1/16W	155-175
1630 4102	Resistor - 1.0KΩ ±5% 1/16W	155-176
1630 4103	Resistor - 10KΩ ±5% 1/16W	155-177

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1630 4106	Resistor -10m Ω ±5% 1/16W	155-179
1630 4121	Resistor - 120 Ω ±5% 1/16W	155-180
1630 4150	Resistor - 15Ω ±5.00%,1/16W	155-181
1630 4151	Registor - 150 Ω ±5% 1/16W	155-182
1630 4181	Resistor - 180 Ω ±5% 1/16W	155-183
1630 4222	Registor - 2.2k Ω - ±5%	155-184
1630 4223	Registor - 22k Ω - ±5% - 1/16W	155-185
1630 4272	Registor - 2.7k Ω - ±5% - 1/16W	155-186
1630 4330	Resistor - 33 Ω ±5% 1/8W	155-187
1630 4332	Resistor - 3.3K Ω ±5% 1/16W	155-188
1630 4334	Resistor - 330K Ω ±5% 1/16W	155-189
1630 4391	Resistor -390Ω ±5.00% 1/16W	155-190
1630 4471	Resistor - 470 Ω ±5% 1/16W	155-191
1630 4472	Resistor - 4.7KΩ ±5% 1/16W	155-192
1630 4511	Registor - 510 Ω - ±5% - 1/16W	155-193
1630 4514	Resistor 510kΩ ±5.00% 1/16W	155-194
1630 4562	Registor - 5.6k Ω - ±5% - 1/16W	155-195
1630 4563	Resistor - 56KΩ ±5% 1/16W	155-196
1630 4680	Resistor - 68 Ω ±5% 1/16W	155-197
1630 4751	Resistor - 50Ω±5.00% 1/16W	155-198
1630 4820	Resistor - 82 Ω ±5% 1/16W	155-199
1631 0000	Resistor - 0Ω 1/4W	147-201
1633 1003	Resistor - 100K Ω ±1% 1/10W	147-202
1633 1102	Resistor-11k Ω ±1% 1/10W	147-203
1633 1403	Resistor - 140K Ω ±1% 1/10W	147-204
1633 1542	Resistor - 15.4K Ω ±1%	147-205
1633 4700	Registor - 470 Ω - ±1% - 1/10W	147-206
1633 5231	Resistor - 5.23K Ω ±1% 1/10W	147-207
1634 0000	Registor - 0Ω - 1/16W	155-200
1634 1002	Resistor - 10 Ω ±5% 1/16W	155-201
1634 3921	Resistor - 3.92KΩ ±1% 1/1	155-202
1640 5100	Capacitor - 10µF +20% 35V	147-208

Part No.	Description	Page and Index No.
1640 5101	Capacitor - 100µF ±20% 50V	147-209
1640 5470	Capacitor - 47µF ±20% 50V	147-210
1640 5470	Capacitor - 47µF ±20% 50V	155-203
1644 0470	Capacitor - 47µF ±20% 10V	155-204
1660 1100	Capacitor - 10pF 50V	147-211
1660 2101	Capacitor - 100pF - ±10% - 50V	155-205
1660 2150	Capacitor - 15pF ±5% 50V	155-206
1660 2151	Capacitor - 150pF ±20% 35V	155-207
1660 2220	Capacitor - 22pF ±20% 35V	155-208
1660 2330	Capacitor - 33pF - ±5% - 50V	155-209
1660 2470	Capacitor - 47pF ±5% 50V	155-210
1660 2471	Capacitor - 470pF - ±5% - 50V	155-211
1660 2820	Capacitor - 82pF ±5% 50V	155-212
1660 3101	Capacitor - 100pF 50V	147-212
1660 3471	Capacitor - 470pF 50V	147-213
1660 4102	Capacitor - 1000pF ±10% 50V	155-213
1660 5472	Capacitor - 4700pF 50V	147-214
1660 5472	Capacitor - 4700pF 50V	155-214
1660 6103	Capacitor - 10000pF - +80%-20%, 50V	155-215
1660 6223	Capacitor 22000pF +80 -20% 50V	155-216
1660 7103	Capacitor - 10000pF 50V	147-215
1660 7104	Capacitor - 100000pF 50V	147-216
1660 8104	Capacitor - 0.1µF +80-20% 25V	155-217
1660 9104	C - 0.1µF 25V	147-217
1902 0037	IC - 4M X8 70NS G1	155-218
1903 0013	RAM 16M 1MX16 60NS	155-219

Part No.	Description	Page and Index No

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Modification Bulletin

Model: SP5	Date: 15-Oct-98	No.: 1

Modified Article: Parts Catalog	Prepared by: M. Tsuyuki
From: GTS and S Field Information Dept.	

Reason for Modification:	☒ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☐ To improve reliability ☐ Other	☐ To meet standards ( )

Please correct your parts catalog as follows.

Part Number Changes

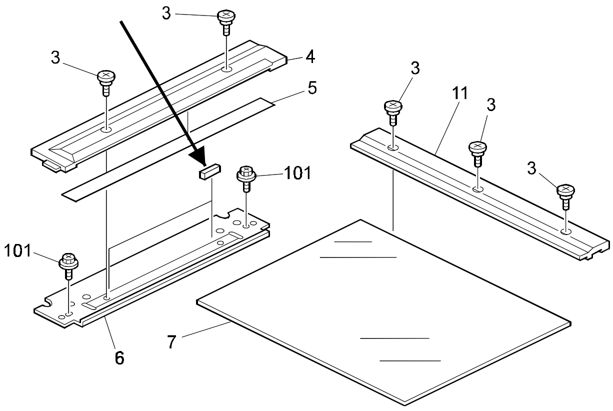
Please change the following part numbers.

Page No.	Index No.	Old		New	
		Part No.	Description	Part No.	Description
81	4	A0963103	Entrance Seal	A2293092	Entrance Seal
89	3	58531190	Spring – Click Plate	AA063591	Spring – Cleaning Blade
95	18	A2293912	Bias Terminal	A2293909	Bias Terminal
97	9	AE042023	Pressure Roller Cleaning Roller	AE042036	Pressure Roller Cleaning Roller
97	11	A1764131	Upper Entrance Seal	A2474131	Upper Entrance Guide
97	12	A1764141	Oil Supply Roller Bracket	A2474141	Oil Supply Roller Bracket
97	13	AA066294	Pressure Spring	AA063294	Pressure Spring
97	21	A2294082	Oil Supply Unit	A2294085	Oil Supply Unit
119	16	AA066299	Torsion Spring	AA066309	Torsion Spring
119	17	A0961172	Tightener	A2291139	Tightener
119	18	AX060126	Brushless Motor – DC21W	AX060169	Brushless Motor
119	19	A2291126	Motor Bracket	A2291122	Motor Bracket
119	21	AA043268	Timing Belt – 656P2M6	AA043277	Timing Belt – 656P2M8
125	12	A2293563	Air Tube	A2293564	Air Tube
133	17	A2295893	ATA HDD	A2295840	ATA HDD

Addition

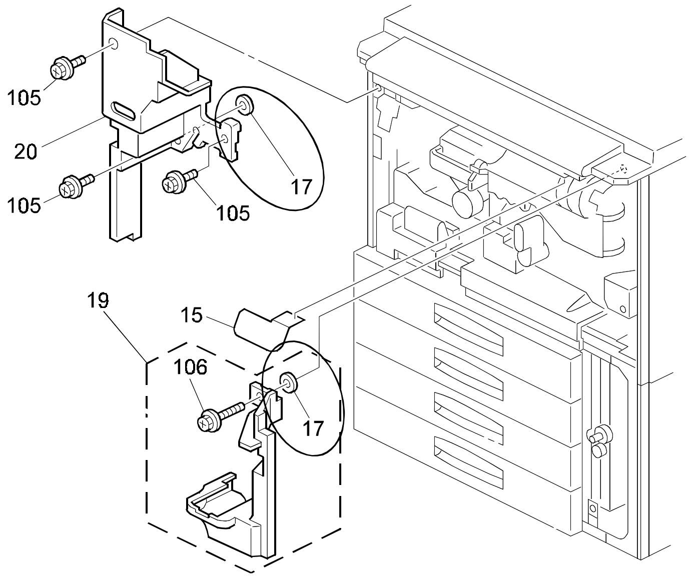
Please add the following part to your parts catalog.

Page No.	Index No.	Part No.	Q'ty	Description
41	20	54421924	2	Exposure Glass Cushion



Deletion

There are three index No.17 on page 14. Please delete two of these as shown in the illustration below.



Please delete the following parts from your parts catalog.

Page No.	Index No.	Part No.	Description
47	27	A2291686	Rear Frame Shield
97	18	A2294144	Cleaning Roller Bracket
97	20	A2294146	Cleaning Blade Support Plate

Other

Please change the part description and add a new part to your parts catalog as follows.

Action	Page	Index No.	Part No.	Description
Change	15	8	A2291302	Front Door (SVN/**NRG**) →Front Door (SVN/**GES NA**)
Add	15	8	A2291239	Front Door (NRG EU)

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Modification Bulletin

PAGE: 1/1

Model: SP5	Date: 31-Oct-98	No.: 2

Modified Article: Development Entrance Seal	Prepared by: A. Sasaki
From: GTS and S Field Information Dept.	

Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☒ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Qty	Int	Page	Index	Note
A229 3092	A229 3091	Entrance Seal	1	X/O	81	4	

The lower seal (straight; the upper seal is a loop) of the development unit entrance seal ass'y (P/N A2293092) may get pinched between the developer and the drum if a large amount of developer accumulates near the photoconductor gap (PG). The seal may be pulled out of position by the friction caused by the rotation of the drum. In the worst case, the seal would peel off.

The width of the lower seal has been shortened from 18 mm to 17 mm.
Though the 17 mm lower seal may wrap up, the function of this part is not adversely affected.

Please refer to RTB No. 4 for the details.

MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION	REI PRODUCTION
				SERIAL NO.	SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10	Production will move to REI	From first production
Aficio 650	120 / 60	USA, Canada, South America	A229–17	Production will move to REI	From first production
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	AS78090017	----------
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	3R30980001	----------
Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	A7908090167	----------
Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	A7908090175	----------
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	From first production	----------
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	From first production	----------

Note: Please refer to RTB No. 4 for the details of the cut-in serial numbers.

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Modification Bulletin

PAGE: 1/1

Model: SP5	Date: 31-Dec-98	No.: 3

Modified Article: Unique Parts for Lanier	Prepared by: M. Tsuyuki
From: GTSS Field Information Dept.	

Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☐ To improve reliability ☒ Other	☐ To meet standards ( )

The following parts have been registered for the Lanier model.

Part number	Description	Page	Index
A2297017	Model Name Plate – LAN 5265	15	17
A2297604	Motor Drive Harness	43	23

MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION SERIAL NO.	CODE	REI PRODUCTION SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10	----------	A229–10	----------
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17	----------	A229–17	----------
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	----------		----------
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	----------		----------
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	----------		----------
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	----------		----------
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	From first production		----------
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	From first production		----------

RICOH **Modification Bulletin** **PAGE: 1/1**

Model: SP5L	Date: 31-Dec-98	No.: 4

Modified Article: Unique Parts for SP5L	Prepared by: M. Tsuyuki
From: GTSS Field Information Dept.	

Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☐ To improve reliability ☒ Other	☐ To meet standards ( )

The following parts have been registered for the SP5L (a 55 cpm version of the SP5).

Part number	Description	Page	Index
A2291283	Front Door (RIC)	15	8
A2291285	Front Door (INF)	15	8
A2297027	Model Name Plate - SVN 9955 DP	15	17
A2297014	Model Name Plate - GES 3255	15	17
A2297018	Model Name Plate - REX 2855	15	17
A2297019	Model Name Plate - NAS D455	15	17
A2297028	Model Name Plate - LAN 5255	15	17
A2299560	SBICU Board - 115V	43	13
A2299561	SBICU Board - 230V	43	13
A2295422	Connecting Harness	129	13

MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION SERIAL NO.
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	From first production
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	From first production
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	From first production
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	From first production
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	From first production
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	From first production
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	From first production
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	From first production

RICOH

Modification Bulletin

Model: SP5/SP5L	Date: 15-Jan-99	No.: 5

Modified Article: Oil Supply Cleaning Roller	Prepared by: M.Tsuyuki
From: GTSS Field Information Dept	

Reason for Modification:	☒ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☐ To improve reliability ☒ Other	☐ To meet standards ( )

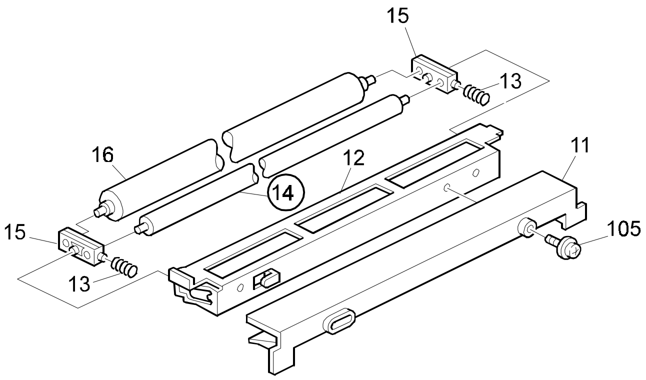
The oil supply cleaning roller has been modified from the first mass-production.

Reason for modification: In the morning, if the customer uses paper which contains a lot of calcium carbonate, black spots may appear on the first several copies.

Please correct your parts catalog as follows:

Old part number	New part number	Description	Page	Index
AE042020	AE042035	Oil Supply Cleaning Roller	97	14

42. Fusing Unit 1 (A229)



			JAPAN PRODUCTION	
MODEL NAME	V/ Hz	DESTINATION	CODE	SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10	From first production
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17	From first production
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	From first production
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	From first production
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	From first production
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	From first production
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	From first production
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	From first production
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	From first production
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	From first production
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	From first production
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	From first production
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	From first production
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	From first production
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	From first production
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	From first production

RICOH

Modification Bulletin

Model: SP5/SP5L	Date: 15-Mar-99	No.: 6

Modified Article: Parts catalog		Prepared by: M. Tsuyuki	
From: GTSS Field Information Dept			
Reason for Modification:	☒ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☐ To improve reliability ☐ Other	☐ To meet standards ( )

Please correct your parts catalog as follows.

Component Change

Index no. 17 (#A2291433) and no. 18 (#A2295200) on page 18 are not included in Operation Panel Ass’y (#A2291412/#A2291414).

Part Deletion

Please delete the following part from your parts catalog.

Part number	Description	Page	Index
A2294150	Oil Supply Cleaning Blade	97	19

MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10	From first production
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17	From first production
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	From first production
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	From first production
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	From first production
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	From first production
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	From first production
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	From first production
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	From first production
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	From first production
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	From first production
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	From first production
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	From first production
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	From first production
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	From first production
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	From first production

Modification **B**ulletin

PAGE: 1/1

Model: SP5/SP5L	Date: 15-Apr-99	No.: MA229007

Modified Article: 1st Tray (Tandem Tray) for LT Models only	Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division	

Reason for Modification:	☒ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☐ To improve reliability ☐ Other	☐ To meet standards ( )

Please correct your parts catalog as follows:

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
A0966630	A2296630	Left Tandem Tray Ass'y	1		53	3	
A1766650	A2296650	Right Tandem Tray Ass'y	1		55	35	

Note: This MB is only for the A229-10, -17, -50, -54, -55, -57 models.

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Modification Bulletin

Model: SP5/SP5L	Date: 15-Apr-99	No.: MA229008

Modified Article: Cushion in the Paper Feed Section	Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division	

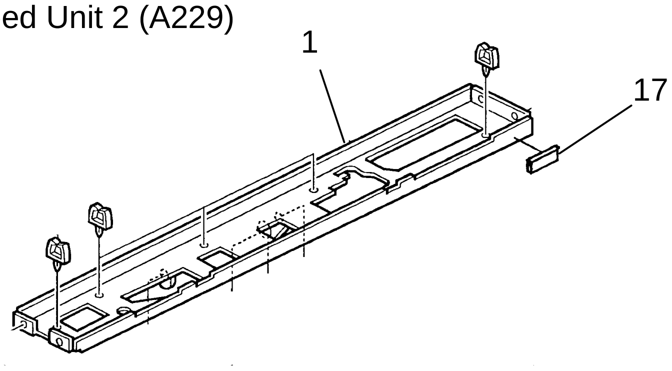
Reason for Modification:	☐ Parts catalog correction	☐ Vendor change	☐ To meet standards ( )
	☐ To facilitate assembly	☒ To improve reliability	
	☐ Part standardization	☐ Other	

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
	54421924	Exposure Glass Cushion	1		65	17	*

*: New Index

To minimize noise from the paper feed section when feeding paper, a cushion has been added as shown.

26. Paper Feed Unit 2 (A229)



MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION	REI PRODUCTION
				SERIAL NO.	SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10		
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17	A7908110357	
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	AS78100001	
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	3R31080001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	A7908100001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	A7908100092	
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	From First Production	
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	From First Production	
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	From First Production	
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	From First Production	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	From First Production	
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	From First Production	
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	From First Production	
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	From First Production	
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	From First Production	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	From First Production	

RICOH

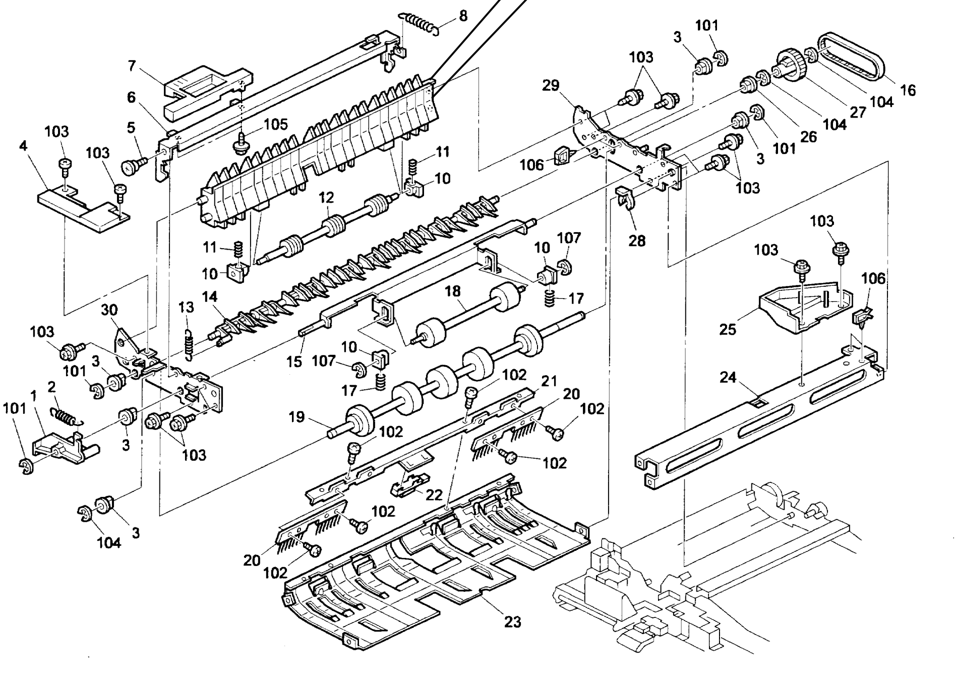
Modification Bulletin

Model: SP5/SP5L		Date: 15-Apr-99	No.: MA229009
Modified Article: Parts Catalog		Prepared by: M. Tsuyuki	
From: Technical Service Dept., GTS Division			
Reason for Modification:	☒ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☐ To improve reliability ☐ Other	☐ To meet standards ( )

Index #9 on page 110 is missing. Please add it to your parts catalog as follows.

A2294623

#9 Lower Entrance Guide Plate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MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10	From first production
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17	From first production
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	From first production
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	From first production
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	From first production
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	From first production
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	From first production
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	From first production
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	From first production
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	From first production
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	From first production
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	From first production
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	From first production
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	From first production
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	From first production
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	From first production

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Modification **B**ulletin

Model: SP5/SP5L	Date: 15-Apr-99	No.: MA229010

Modified Article: Left and Right Holders for A4 Models only	Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division	

Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☒ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
A0974126	A2294171	Left Holder	1	X/O	97	10	
A0974129	A2294175	Right Holder	1	X/O	97	7	

To reduce toner adhesion on the pressure roller when a large number of single-sided copies are made in a short period of time, the pressure of the pressure roller cleaning roller against the pressure roller has been increased.

This MB is only for the A4 models (A229-22, -26, -27, -29, -59, -62, -64, -65, -66, -67)

MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION SERIAL NO.	REI PRODUCTION SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10		
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17	A7908110357	
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	AS78100001	
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	3R31080001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	A7908100001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	A7908100092	
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	From First Production	
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	From First Production	
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	From First Production	
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	From First Production	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	From First Production	
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	From First Production	
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	From First Production	
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	From First Production	
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	From First Production	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	From First Production	

RICOH

Modification Bulletin

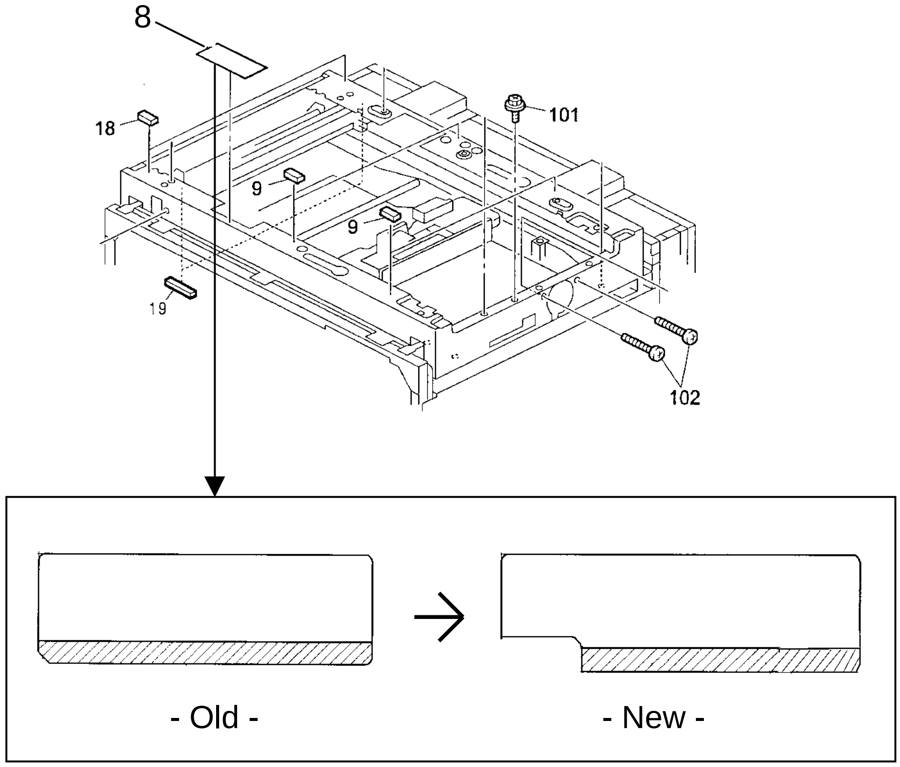
Model: SP5/SP5L	Date: 15-Apr-99	No.: MA229011

Modified Article: Seal - 90 x 29.5 x 0.2	Prepared by: A.Sasaki
From: Technical Service Dept., GTS Division	

Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☒ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
AA150636	AA150704	Seal – 90x29.5x0.2	1	X/O	41	8	

To prevent the bracket on the back of the operation panel from touching and pushing the seal, the shape of the seal has been changed as shown.



				JAPAN PRODUCTION	REI PRODUCTION
MODEL NAME	V/ Hz	DESTINATION	CODE	SERIAL NO.	SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10		
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17	A7908110357	
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	AS78090001	
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	3R30980001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	A7908090001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	A7908090175	
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	From First Production	
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	From First Production	
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	From First Production	
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	From First Production	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	From First Production	
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	From First Production	
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	From First Production	
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	From First Production	
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	From First Production	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	From First Production	

RICOH

Modification Bulletin

PAGE: 1/2

Model: SP5/SP5L	Date: 15-May-99	No.: MA229012

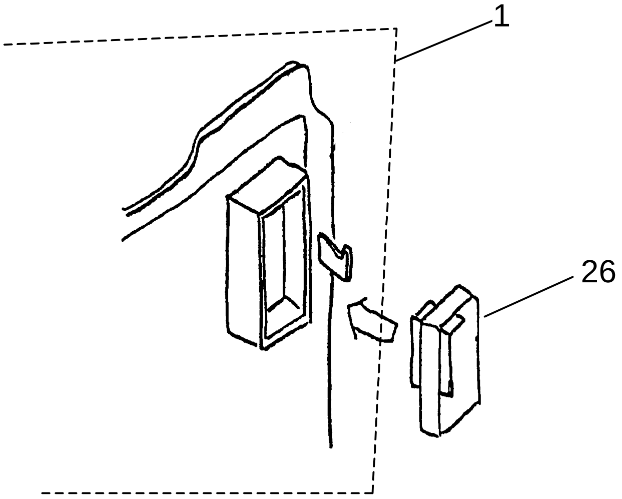
Modified Article: Ozone Filter			Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division			
Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☐ To improve reliability ☐ Other	☒ To meet standards (New BAM)

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
	AA010104	Ozone Filter	1		17	26	*1
A1762110		Fan Motor – DC24V 10.8W	1		129	10	
	A2472110	DC Motor – 11W	1	O/O	129	10	
A0975553	A2291195	Cooling Fan Motor - DC24V 9.6W	1	O/O	137	31	

*1: New index

1. To meet the BAM new standards, an ozone filter has been added as shown. (This is only for the A229-22, -26, -27, -62, -64, -65, -66, -67 models)
2. Two fan motors have been changed to ones with a lower noise level.

2. Exterior 2 (A229)



MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION	REI PRODUCTION
				SERIAL NO.	SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10		
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17	A7908110357	
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	AS778100001	
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	3R31080001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	A7908100001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	A7908110590	
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	2B48120001	
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	L0339010371	
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	L0338110001	
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	A7908120321	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	A7908120118	
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	B128120001	
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	L0339010576	
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	L0338110101	
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	3U21280001	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	A7908120158	

RICOH **Modification Bulletin** **PAGE: 1/1**

Model: SP5/SP5L	Date: 15-May-99	No.: MA229013

Modified Article: Reversal Bracket			Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division			
Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☒ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
A2294633	A2294640	Reversal Bracket	1	X/O	111	15	

To improve durability, the shape of this bracket has been changed.

MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION SERIAL NO.	REI PRODUCTION SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10		
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17		
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	AS78110061	
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	3R31280001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	A7908110350	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	A7908110552	
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	From First Production	
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	From First Production	
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	From First Production	
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	From First Production	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	From First Production	
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	From First Production	
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	From First Production	
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	From First Production	
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	From First Production	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	From First Production	

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Modification Bulletin

PAGE: 1/1

Model: SP5/SP5L	Date: 15-May-99	No.: MA229014

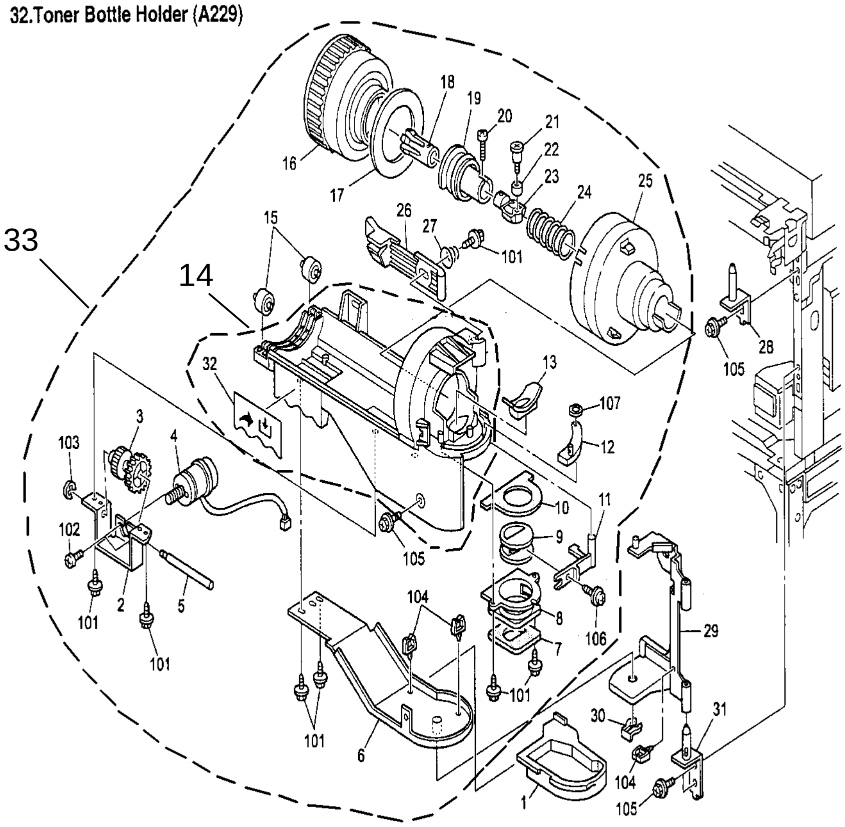
Modified Article: Toner Bottle Holder Ass'y			Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division			
Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☐ To improve reliability ☒ Other	☐ To meet standards ( )

1. As per a field request, the Toner Bottle Holder Ass’y has been registered as a service part. Please refer to the illustration below for the component parts.
2. The illustration for Index 14 has been changed. The decal with Index 32 is included in Index 14. Please correct the parts catalog as shown.

Old part number	New part number	Description	Q’ty	Int	Page	Index	Note
	A229 3202	Toner Bottle Holder Ass’y (RIC LT)	1		77	33	*1
	A229 3203	Toner Bottle Holder Ass’y (RIC A4)	1		77	33	*1
	A229 3204	Toner Bottle Holder Ass’y (Others)	1		77	33	*1

*1: New index

32.Toner Bottle Holder (A229)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Modification Bulletin

PAGE: 1/2

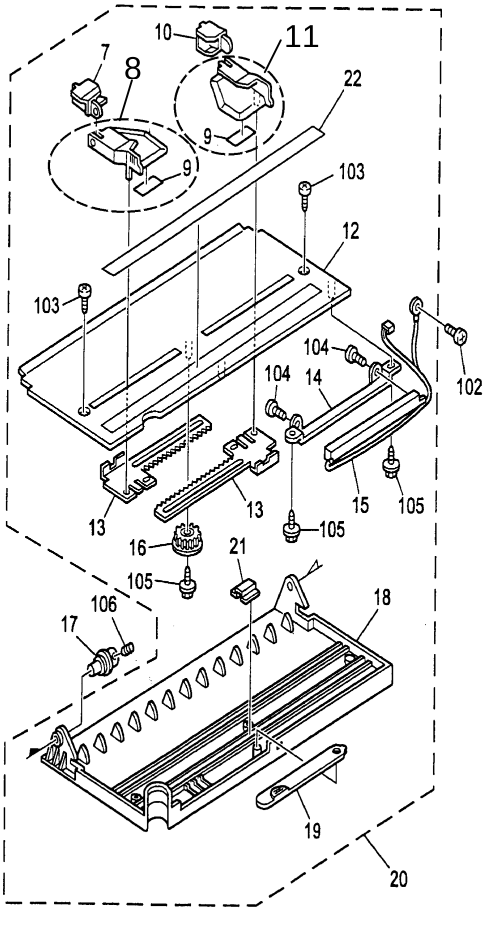
Model: SP5/SP5L	Date: 15-May-99	No.: MA229015

Modified Article: Side Fence Seal on the By-pass Tray			Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division			
Reason for Modification:	☒ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☒ To improve reliability ☐ Other	☐ To meet standards ( )

1. To minimize the possible noise generated when the side fences of the by-pass tray are opened, the width of the mylar seal has been enlarged from 16 mm to 26 mm.
2. The illustrations for Index 8 and 11 have been changed. The seal (Index 9) is included in Index 8 and 11. Please correct the parts catalog as shown.

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
A1762741	A2292866	Front Side Fence	1	X/O	51	8	
A0692645	A2292870	Seal – 0.2x165x47	2	X/O	51	9	
A1762751	A2292868	Rear Side Fence	1	X/O	51	11	

19. By-pass Feed Unit (A229)



				JAPAN PRODUCTION	REI PRODUCTION
MODEL NAME	V/ Hz	DESTINATION	CODE	SERIAL NO.	SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10		
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17		
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	AS79010001	
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	3R30190001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	A7909010899	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	A7909010001	
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	2B49010001	
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	From First Production	
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	L0339010421	
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	A7908120889	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	A7909032353	
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	B129010001	
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	From First Production	
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	L0339010701	
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	3U20190001	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	A7909010039	
Ricoh Aficio 650	220, 230, 240/ 50, 60	China	A229-69	From First Production	

RICOH

Modification Bulletin

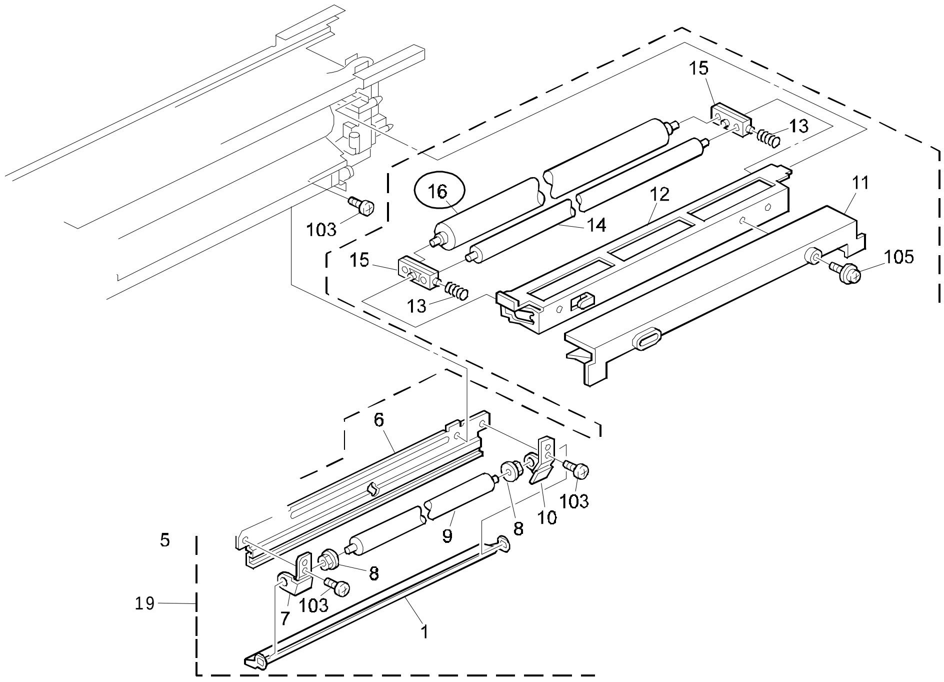
Model: SP5/SP5L	Date: 15-May-99	No.: MA229016

Modified Article: Oil Supply Roller	Prepared by: M. Tsuyuki
From: Technical Service Dept., GTS Division	

Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☒ Part standardization	☐ Vendor change ☐ To improve reliability ☐ Other	☐ To meet standards ( )

The oil supply roller has been changed to standardize the parts with current models (F401 series) as follows.

Old part number	New part number	Description	Q’ty	Int.	Page	Index
AE040023	AE040016	Oil Supply Roller	1	O/O	97	16



				JAPAN PRODUCTION
MODEL NAME	V/ Hz	DESTINATION	CODE	SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10	-
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17	-
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	-
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	-
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	-
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	-
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	-
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	-
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	-
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	-
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	-
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	-
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	-
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	-
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	-
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	-

Modification Bulletin

Reissued: 30-Jun-99

Model: SP5/SP5L	Date: 15-May-99	No.: MA229017a

MB Correction

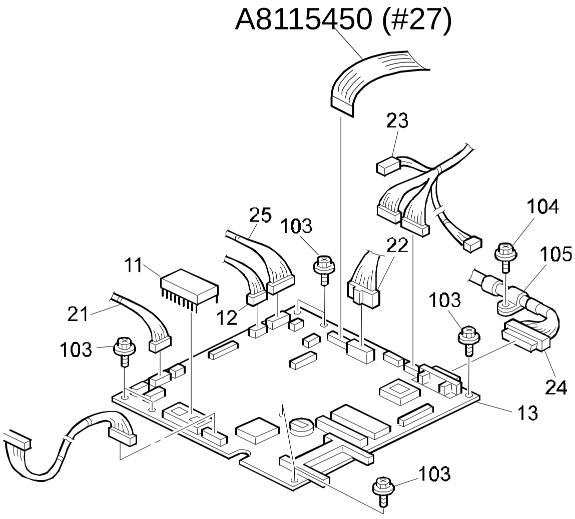
The items in bold italics have been corrected or added.

Modified Article: Parts Catalog			Prepared by: M. Tsuyuki
From: Technical Service Dept., GTS Division			
Reason for Modification:	☒ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☐ To improve reliability ☐ Other	☐ To meet standards ( )

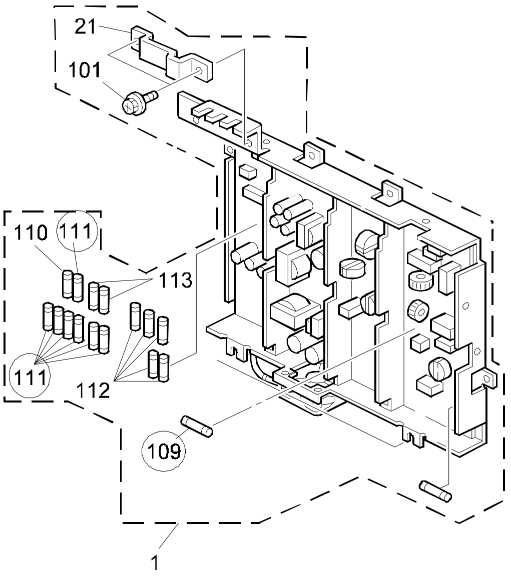
Please correct your parts catalog as follows.

Item	Part number	Description	Page	Index
Missing	A8115450	Printer Harness	***43***	27(new)
Missing	11070880	Fuse - 6.3A 250V (230V)	131	109
Change	11070864	Fuse - 12A 250V -> Fuse - 12A 250V (115V)	131	109
Change	11070869	Fuse - 2A 125V -> Fuse - 6.3A 125V	131	111

15. Optics Section 2 (A229)



59.Electrical Section 2 (A229)



MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10	From first production
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17	From first production
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	From first production
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	From first production
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	From first production
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	From first production
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	From first production
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	From first production
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	From first production
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	From first production
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	From first production
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	From first production
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	From first production
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	From first production
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	From first production
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	From first production

Modification Bulletin

Model: SP5/SP5L	Date: 15-May-99	No.: MA229018

Modified Article: Reverse Guide Plate	Prepared by: A. Sasaki
From: GTS and S Field Information Dept.	

Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☒ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Qty	Int	Page	Index	Note
A229 4483	A229 4477	Reverse Guide Plate	1	X/O	105	12	

To keep paper transportation in good condition, the material of this plate has been changed.

				JAPAN PRODUCTION	REI PRODUCTION
MODEL NAME	V/ Hz	DESTINATION	CODE	SERIAL NO.	SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10		
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17	A7908110357	
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	AS78110001	
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	3R31180001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	A7908110117	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	A7908110360	
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	From First Production	
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	From First Production	
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	From First Production	
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	From First Production	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	From First Production	
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	From First Production	
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	From First Production	
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	From First Production	
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	From First Production	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	From First Production	
Ricoh Aficio 650	220, 230, 240/ 50, 60	China	A229-69	From First Production	

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Modification Bulletin

PAGE: 1/2

Model: SP5/SP5L	Date: 15-May-99	No.: MA229019

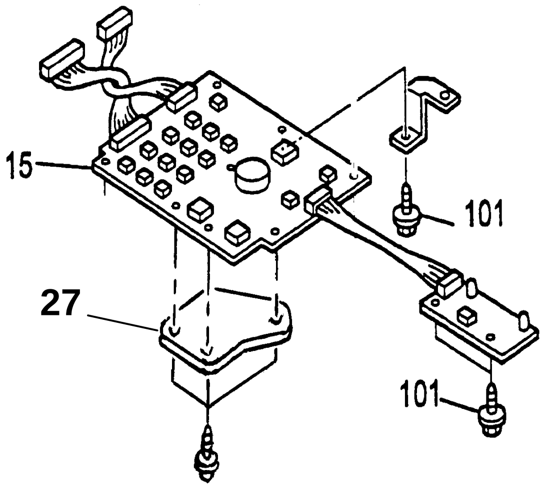
Modified Article: Support Plate - Operation Panel			Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division			
Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☒ To improve reliability ☐ Other	☐ To meet standards ( )

To support the 10-key Board, a support plate has been added under the board as shown.

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
	A2291472	Support Plate - Operation Panel	1		19	27	*1

*1: New Index

3. Operation Panel (A229)



				JAPAN PRODUCTION	REI PRODUCTION
MODEL NAME	V/ Hz	DESTINATION	CODE	SERIAL NO.	SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10		
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17	A7908110357	
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	AS78100004	
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	3R31180001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	A7908110001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	A7908100142	
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	From First Production	
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	From First Production	
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	From First Production	
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	From First Production	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	From First Production	
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	From First Production	
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	From First Production	
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	From First Production	
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	From First Production	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	From First Production	
Ricoh Aficio 650	220, 230, 240/ 50, 60	China	A229-69	From First Production	

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Modification Bulletin

Model: SP5/SP5L	Date: 15-May-99	No.: MA229020

Modified Article: Toner Bottle Motor Mechanism		Prepared by: A. Sasaki	
From: Technical Service Dept., GTS Division			
Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☒ To improve reliability ☐ Other	☐ To meet standards ( )

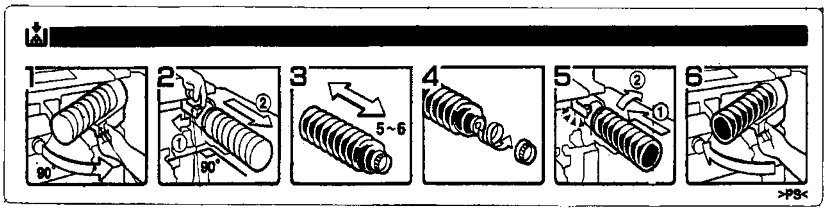
If the customer turns the toner bottle clockwise when a new bottle is installed, the teeth of the worm gear of the toner supply motor jump and are damaged. Then, the gear makes a noise when it is activated.

To improve the strength of the toner bottle motor mechanism, the following parts have been changed.

1. The material of the worm gear of the toner supply motor has been changed from resin to brass.
2. The thickness of the toner bottle bracket has been increased from 1.2 mm to 1.6 mm.
3. The length of the shaft has been extended from 50 mm to 51 mm.
4. Arrow mark #2 in Step 5 of the decal for the toner replacement has been deleted as shown.

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
A2293238	A2293248	Toner Bottle Bracket	1	X/O	77	2	
A2293240	A2293245	DC Motor	1	X/O	77	4	
AA145811	AA145817	Idler Shaft – Toner Bottle	1	X/O	77	5	

Old



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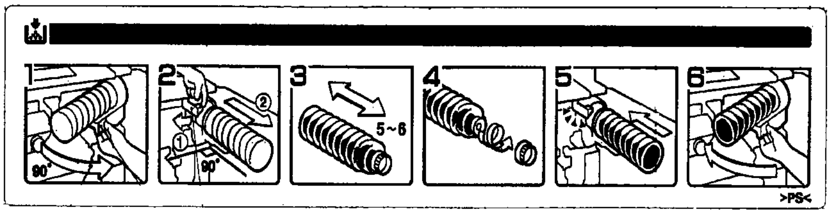
New



MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION SERIAL NO.	REI PRODUCTION SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10		
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17		
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	AS78110061	
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	3R31180051	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	A7908110246	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	A7908110410	
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	From First Production	
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	From First Production	
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	From First Production	
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	From First Production	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	From First Production	
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	From First Production	
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	From First Production	
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	From First Production	
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	From First Production	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	From First Production	
Ricoh Aficio 650	220, 230, 240/ 50, 60	China	A229-69	From First Production	

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Modification Bulletin

PAGE: 1/2

Model: SP5/SP5L	Date: 15-May-99	No.: MA229021

Modified Article: DF Front Cover			Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division			
Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☒ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
A8061711	A8061712	Front Cover	1	O/X	21	4	
A8061791	A8061792	Original Table Cover	1	O/O	21	5	

To minimize the space between the DF Front Cover and the Original Table Cover, the shape of the Front Cover has been changed. The Original Table Cover has also been changed because of the change to the Front Cover.

This is to prevent the possibility that the user's fingers may be pinched in between the two covers when the DF is opened.

Please note that both parts should be replaced when the DF Front Cover is replaced with a new one, because the new Front Cover does not fit the old Original Table Cover.

MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION SERIAL NO.	REI PRODUCTION SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10		
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17	A7908110357	
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	AS78110036	
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	3R31180001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	A7908110001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	A7908110360	
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	From First Production	
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	From First Production	
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	From First Production	
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	From First Production	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	From First Production	
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	From First Production	
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	From First Production	
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	From First Production	
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	From First Production	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	From First Production	
Ricoh Aficio 650	220, 230, 240/ 50, 60	China	A229-69	From First Production	

Modification Bulletin

Model: SP5/SP5L	Date: 15-Jun-99	No.: MA229022

Modified Article: Second Tray for A5/HLT Lengthwise			Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division			
Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☒ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
A2296511	A2296517	Universal Tray – LT	1	X/O	57	3	
A2296512	A2296518	Universal Tray – A4	1	X/O	57	3	
A0966534	A2296534	Front Side Fence	1	X/X	57	14	
A0966556	A2296556	Tray Bottom Plate	1	X/X	57	17	
A0966541	A2296541	Gear Side Fence	1	X/X	57	19	
A0966544	A2296544	Side Fence Plate – A4	1	X/O	57	22	
A0966545	A2296545	Side Fence Plate – LT	1	X/O	57	22	
A0966539	AB014132	Side Fence Gear	2	X/X	57	23	

To allow A5/HLT paper to be set in the short-edge-feed direction in the second tray, the above parts have been changed.

MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION SERIAL NO.	REI PRODUCTION SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10		
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17		
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	AS79010001	
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	3R30190001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	A7909010899	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	A7909010001	
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	From First Production	
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	From First Production	
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	L0338120176	
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	From First Production	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	A7909032353	
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	B129010001	
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	From First Production	
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	L0338120251	
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	From First Production	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	From First Production	
Ricoh Aficio 650	220, 230, 240/ 50, 60	China	A229-69	From First Production	

Modification **B**ulletin

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Model: SP5/SP5L	Date: 30-Jun-99	No.: MA229023

Modified Article: Rear Spring Plate			Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division			
Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☒ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
A0963860	A2473855	Rear Spring Plate	1	O/O	93	20	

To ensure conductive contact between the Transfer Bias Roller and Rear Spring Plate, a conductive sheet has been added to the Rear Spring Plate.

RICOH # Modification Bulletin

PAGE: 1/1

Reissued: 31-Aug-99

Model: SP5SP5L	Date: 30-Jun-99	No.: MA229024b

MB Correction

The items in bold italic have been corrected or added.

Modified Article: Rear Side Plate in the Paper Exit Section	Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division	

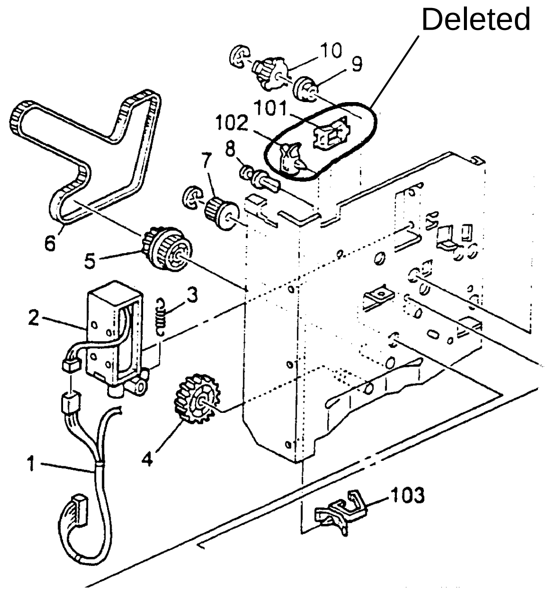
Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☒ Part standardization	☐ Vendor change ☐ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
A229 4451	***A293 4451***	Exit Rear Side Plate	1	X/X	107	3	
A229 4466	A293 4466	Pressure Shaft	1	X/X	107	10	
0720 0040	***0720 0040***	Retaining Ring – M4	***n – n-1***		107	102	
0805 3480	0805 3480	Bushing – 6mm	***n – n-1***		107	104	
1105 0113		Edge – P108	1		105	101	
1105 0283		Clamp	1		105	102	

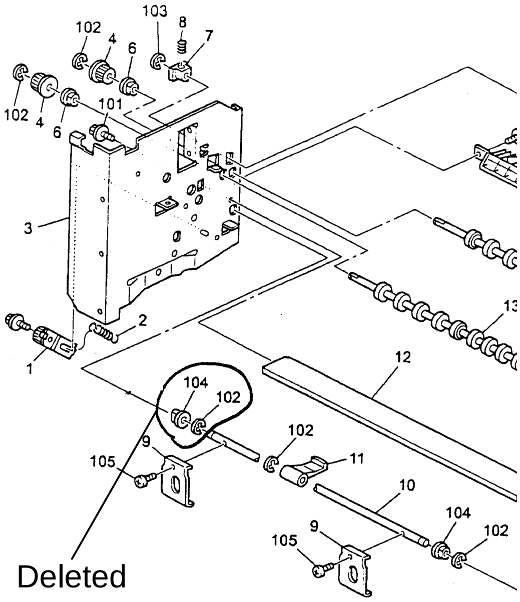
To standardize parts with a new model, the parts in the above table have been changed or deleted.

Please replace the Exit Rear Side Plate and Pressure Shaft together when one of the old types of these parts has to be replaced.

46. Paper Exit unit 2 (A229)



47. Paper Exit Unit 3 (A229)



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Modification Bulletin

PAGE: 1/1

Model: SP5/SP5L	Date: 30-Jun-99	No.: MA229025

Modified Article: Parts Catalog Correction (China version)

From: Technical Service Dept., GTS Division

Prepared by: A. Sasaki

Reason for Modification:	☒ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☐ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
AA03 2041	AA03 2042	Toner Collection Bottle	1		17	11	
AA00 0059		Caution Decal – English	1		17	13	
	AA00 0550	Caution Decal – CHN					

Please correct your parts catalog as listed in the above table.

This MB is only for the A229-69 model (China version).

RICOH

Modification Bulletin

Model: SP5/SP5L	Date: 30-Jun-99	No.: MA229026

Modified Article: Toner Bottle Motor Mechanism (2)	Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division	

Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☒ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
AB01 7464		Connecting Gear	1		77	3	
	A229 3242	Toner Bottle Joint Gear	1		77	3	*1
	A229 3243	Motor Joint Gear	1		77	34	*1 *3
A229 3245	A229 3240	DC Motor	1		77	4	*2
	AA06 0291	Spring	1		77	35	*1 *3
	AA13 2024	Spacer – M6	1		77	36	*1 *3

This is to inform about the second step of the modification in MB No. MA229020.

To prevent the gear from being damaged even if the toner bottle is turned clockwise when installed, a one-way mechanism has been added by using two gears.

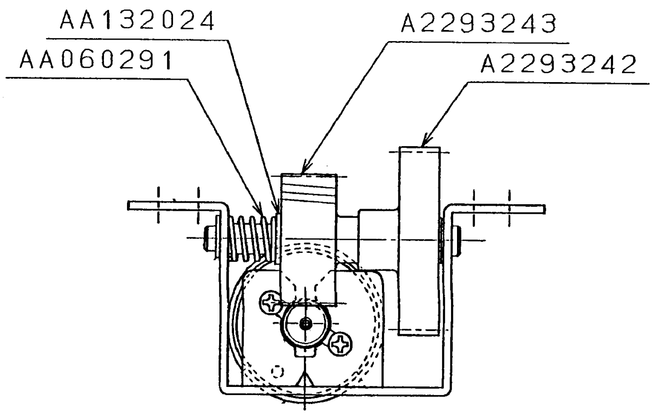
When the toner bottle is turned clockwise, the engagement of the two gears is released.

- Note -

*1: Please note that the two gears, the spring, and the spacer should be replaced at the same time.

*2: It was informed in MB No. MA229020 that the material of the motor had been changed from resin to brass, but this modification had NOT been done actually, due to difficulties with motor production using brass. So, the part number of the motor has been changed back to the old one.

*3: New Index



MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION SERIAL NO.	REI PRODUCTION SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10		
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17		
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	AS79050001	
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	3R30590001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	A7909040763	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	A7909050343	
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	3B89050001	
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	L0469052099	
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	L0339052099	
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	A9049040476	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	A9049040818	
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	B129040110	
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	L0469050258	
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	L0339052401	
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	3U20490001	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	A9049040057	
Ricoh Aficio 650	220, 230, 240/ 50, 60	China	A229-69	From First Production	

RICOH Modification Bulletin

PAGE: 1/1

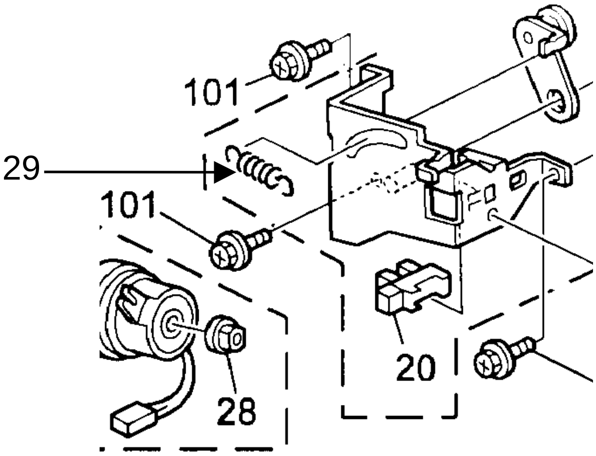
Model: SP5/SP5L	Date: 30-Jun-99	No.: MA229027

Modified Article: Parts Catalog Correction			Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division			
Reason for Modification:	☒ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☐ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
	AA06 0722	Tension Spring	1		123	29	*1

*1: New index

Please add the part in the above table to your parts catalog.



RICOH

Modification Bulletin

PAGE: 1/1

Model: SP5/SP5L	Date: 30-Jun-99	No.: MA229028

Modified Article: Plate Nut in Toner Supply Unit			Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division			
Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☒ Part standardization	☐ Vendor change ☐ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
A0963182		Plate Nut	1	O/O	79	13	
	A2473123	Plate Nut - Slitter					

To standardize parts with a new model, the part in the above table has been changed.

RICOH

Modification Bulletin

Model: SP5/SP5L	Date: 15-Jul-99	No.: MA229029

Modified Article: DF Feed Belt	Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division	

Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☒ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
A8061296		Transport Belt Roller	1	X/O	25	8	*1
	A8061293	Feed Belt Drive Roller					
A8061291		Transport Belt Bracket	1	X/O	25	9	*1
	A8061292	Feed Belt Bracket					
A6801241	A8061295	Feed Belt	1	X/X	25	10	*1
A8061297		Transport Belt Roller	1	X/O	25	11	*1
	A8061294	Feed Belt Driven Roller					

Note *1: Please replace the four parts together when any of the old parts is replaced.

To minimize deterioration of the surface of the DF feed belt, the material and production process of the feed belt have been changed.

The other three parts have also been changed to make the feed belt work smoothly, for following reason:

> If only the feed belt is replaced from the old type to the new type, the new feed belt may run onto the edge of the feed belt rollers if a jammed original between the feed belt and separation roller is pulled diagonally. Once the feed belt runs onto the edge of the feed belt rollers, it tends to stay there and may cause a skew problem.
>
> Even if the feed belt runs onto the edge of the rollers, the new rollers and bracket can make the feed belt go back to its original position when next job starts.

MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION SERIAL NO.	REI PRODUCTION SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10		
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17		
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	AS79060001	
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	3R30690001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	A7909060001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	A790905034	
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	2B49050001	
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	L0469060265	
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	L0339052199	
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	A9049060243	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	A7909050206	
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	B129050101	
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	L0469060590	
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	L0339052411	
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	3U20590071	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	A7909050092	
Ricoh Aficio 650	220, 230, 240/ 50, 60	China	A229-69	A790906xxxx	

RICOH

Modification Bulletin

PAGE: 1/1

Model: SP5/SP5L for Chinese Model only	Date: 15-Jul-99	No.: MA229030

Modified Article: Toner Collection Bottle	Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division	

Reason for Modification:	☒ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☐ To improve reliability ☐ Other	☐ To meet standards ( )

Incorrect part number	Correct part number	Description	Q'ty	Int	Page	Index	Note
AA032041	AA032042	Toner Collection Bottle	1		17	11	

Please correct your parts catalog as listed in the above table.

Note: This MB is only for the A229-69 model (Chinese version).

RICOH

Modification Bulletin

PAGE: 1/1

Model: SP5/SP5L	Date: 15-Jul-99	No.: MA229031

Modified Article: Magnetic Clutch in the By-pass Feed Unit			Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division			
Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☒ Part standardization	☐ Vendor change ☐ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
AX20 0154	AX20 0205	Magnetic Clutch	1	O/O	71	28	

To standardize parts with a new model, the part in the above table has been changed.

RICOH

Modification Bulletin

PAGE: 1/1

Model: SP5/SP5L	Date: 15-Jul-99	No.: MA229032

Modified Article: Exit Roller - Driven			Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division			
Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☒ Part standardization	☐ Vendor change ☐ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
AF022104	AF022126	Exit Roller – Driven	1	O/O	103	15	

To standardize parts with a new model, the part in the above table has been changed.

RICOH

Modification **B**ulletin

PAGE: 1/1

Model: SP5/SP5L	Date: 15-Jul-99	No.: MA229033

Modified Article: Screw for Drum Pulley	Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division	

Reason for Modification:	☐ Parts catalog correction ☒ To facilitate assembly ☐ Part standardization	☐ Vendor change ☐ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
05740040E		Hexagon Headless Set Screw-M4x4	2 - 1		121	105	
	05740050E	Hexagon Headless Set Screw-M4x5	0 - 1	O/O	121	115	*1

*1: New index

To facilitate assembly on the production line, the length of the screw attaching the drum pulley (P/N A096 2316, Page 121, Index 10) has been changed from 4 mm to 5 mm.

RICOH

Modification Bulletin

Model: SP5/SP5L	Date: 15-Jul-99	No.: MA229034

Modified Article: Development Motor			Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division			
Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☒ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
A175 5305	A229 5305	Development Motor – DC24W	1	X/O	119	1	

To prevent a small amount of oil from coming out from the bushing of the development motor, the bushing has been changed to a ball bearing, so the part number of the development motor has been changed.

If the oil comes into the sensor or clutch in the paper feed section, a paper jam may occur.

MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION SERIAL NO.	REI PRODUCTION SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10		
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17		
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	AS78110061	
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	3R31180051	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	A7908110246	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	A7908110410	
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	2B48120001	
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	L0339010371	
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	From First Production	
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	From First Production	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	From First Production	
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	From First Production	
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	From First Production	
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	From First Production	
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	From First Production	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	From First Production	
Ricoh Aficio 650	220, 230, 240/ 50, 60	China	A229-69	From First Production	

RICOH

Modification Bulletin

Model: SP5/SP5L	Date: 15-Jul-99	No.: MA229035

Modified Article: Spring - DF Feed Belt			Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division			
Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☒ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
AA06 3318	A806 4261	Spring – Belt Guide Roller	2	X/O	25	13	

To reduce the deterioration of the DF feed belt, the springs stretching the belt have been changed to stronger ones.

The new springs increase the friction between the feed belt and separation roller. This can prevent the separation roller from being turned in the opposite direction to the feed belt.

MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION SERIAL NO.	REI PRODUCTION SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10		
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17		
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	AS79020201	
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	3R30390001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	A7909020881	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	A7909040825	
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	2B49020001	
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	L0339031226	
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	L0339021022	
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	A7909020001	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	A7909032353	
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	B129030001	
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	L0339031326	
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	L0339021111	
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	3U20290001	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	A7909021181	
Ricoh Aficio 650	220, 230, 240/ 50, 60	China	A229-69	From First Production	

RICOH

Modification Bulletin

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Model: SP5/SP5L	Date: 15-Jul-99	No.: MA229036

Modified Article: Transfer Unit Ass'y			Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division			
Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☐ To improve reliability ☒ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
	A229 3810	Transfer Unit Ass'y	1		93	*	*1

*1: New index

As per field request, the part number of the transfer unit ass'y has been registered as a service part.

This part includes all of the parts listed on pages 92 and 94 of the parts catalog.

RICOH

Modification Bulletin

PAGE: 1/1

Model: SP5/SP5L	Date: 15-Aug-99	No.: MA229037

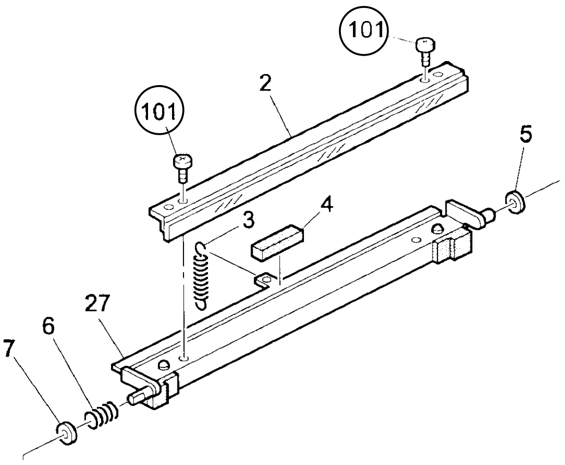
Modified Article: Screws for Cleaning Blade	Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division	

Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☒ Part standardization	☐ Vendor change ☐ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
0314 0060B		Philips Pan Head Screw – M4x6	2		89	101	
	0314 0040B	Philips Pan Head Screw – M4x4	2	O/O	89	101	

To standardize parts with a new model, the part in the above table has been changed.

38. PCU 3 (A229)



RICOH

Modification Bulletin

PAGE: 1/1

Model: SP5/SP5L	Date: 15-Aug-99	No.: MA229038

Modified Article: Hard Disk	Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division	

Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☐ To improve reliability ☒ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
A229 5840	A229 5841	ATA HDD	1	O/O	133	17	

The hard disk has been changed because of discontinuation of production of the old part.

RICOH

Modification Bulletin

Model: SP5/SP5L	Date: 15-Sep-99	No.: MA229039

Modified Article: Paper End Feeler in Third Tray	Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division	

Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☒ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
A096 6362	A229 6362	Paper End Feeler	1	X/O	65	2	

The paper end feeler of the third tray may touch the bottom of the second tray. This causes the paper in the third tray to be caught by the feeler and paper skew may occur.

This symptom occurs only on machines in which the new second tray is installed. Please refer to MB No. 22 for the targeted serial numbers.

MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION SERIAL NO.	REI PRODUCTION SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10		
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17		
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	AS79060001	
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	3R30690001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	A7909060001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	A7909060171	
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	3B89060001	
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	L0469060265	
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	L0339062472	
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	A9049060243	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	A9049060768	
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	B129060001	
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	L0469060590	
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	L0339062682	
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	3U20690001	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	A9049060001	
Ricoh Aficio 550	220, 230, 240/ 50, 60	China	A229-69	A9049070396	

RICOH

Modification Bulletin

Model: SP5/SP5L	Date: 15-Sep-99	No.: MA229040

Modified Article: Cover Sheet	Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division	

Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☒ To improve reliability ☐ Other	☐ To meet standards ( )

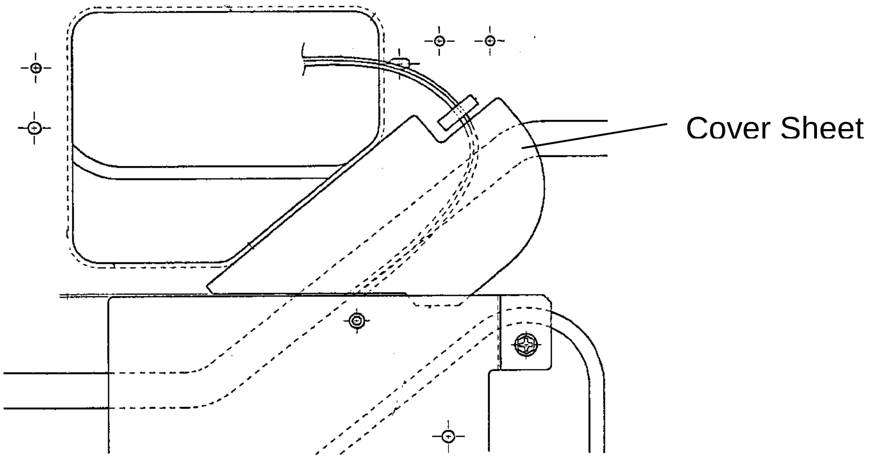
Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
	A229 6080	Cover Sheet	1		139	34	*1

*1: New index

The harness for an anti-condensation heater may be damaged by the edge of the third tray when the third tray is inserted.

To prevent the damage, a sheet has been added to the base frame as shown below.

< Machine Rear Side >



MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION SERIAL NO.	REI PRODUCTION SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10		
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17		
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	AS79080001	
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	3R30890001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	A7909070402	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	A7909080301	
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	3B89070001	
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	L0469080920	
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	L0339083197	
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	A9049070148	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	A9019070356	
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	B129090001	
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	L0469081080	
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	L0339083497	
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	3U20890001	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	A9049080001	
Ricoh Aficio 550	220, 230, 240/ 50, 60	China	A229-69	A9049070396	

Modification Bulletin

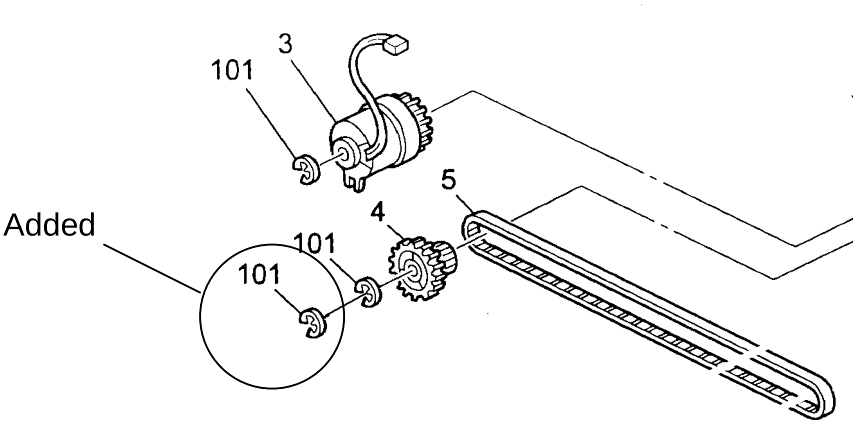
Model: SP5/SP5L	Date: 15-Sep-99	No.: MA229041

Modified Article: Retaining Ring	Prepared by: A.Sasaki
From: Technical Service Dept., GTS Division	

Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☒ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
0720 0040B	0720 0040B	Retaining Ring – M4	1-2		113	101	

To minimize the play of the timing pulley gear (P/N AB01 7469) on the shaft, another retaining ring has been added, so the number of rings is now two.



MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION SERIAL NO.	REI PRODUCTION SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10		
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17		
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	AS79080212	
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	3R30890001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	A7909080131	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	A7909080301	
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	3B89080001	
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	L0469090001	
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	L0339090001	
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	A9049080056	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	A9049080271	
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	B129090001	
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	L0469090361	
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	L0339090261	
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	3U20890001	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	A9049080001	
Ricoh Aficio 550	220, 230, 240/ 50, 60	China	A229-69	A904909xxxx	

Modification Bulletin

Model: SP5/SP5L	Date: 15-Sep-99	No.: MA229042

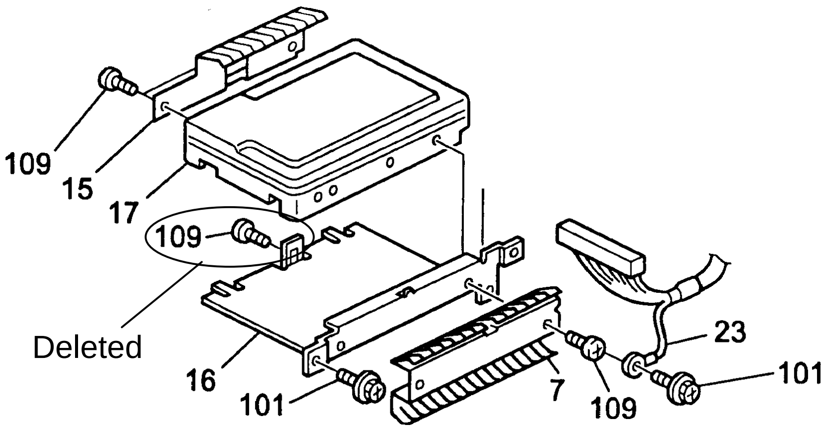
Modified Article: HDD Bracket	Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division	

Reason for Modification:	☐ Parts catalog correction ☒ To facilitate assembly ☐ Part standardization	☐ Vendor change ☐ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
A2295897	A2295843	HDD Ground Plate	1	X/X	133	15	
A2295895	A2295842	HDD Bracket	1	X/X	133	16	
08010153		Bind Screw – M6x32	5-4		133	109	

To facilitate assembly, one of the screws has been deleted as shown.

The shapes of the HDD Ground Plate and HDD Bracket have been changed. Please replace both of them at the same time if one of the old parts has to be replaced.



MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION SERIAL NO.	REI PRODUCTION SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10		
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17	A7909070398	
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	AS79070221	
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	3R30790001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	A7909070001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	A7909070402	
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	3B89070001	
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	L0469080920	
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	L0339083197	
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	A9049070148	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	A9049070356	
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	B129090001	
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	L0469081080	
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	L0339083497	
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	3U20890001	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	A9049080001	
Ricoh Aficio 550	220, 230, 240/ 50, 60	China	A229-69	A9049070396	

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Modification Bulletin

Model: SP5/SP5L	Date: 15-Oct-99	No.: MA229043

Modified Article: Tension Spring for Duplex Inverter Solenoid	Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division	

Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☒ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
AA06 0744	AA06 0835	Tension Spring	1	X/O	115	7	

To ensure that the plunger of the duplex inverter solenoid moves more smoothly, the spring has been changed to a weaker one.

MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION SERIAL NO.	REI PRODUCTION SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10		
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17		
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	AS79090081	
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	3R31090001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	A7909100001	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	A7909090001	
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	3B89090001	
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	L0469090211	
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	L0339090156	
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	A9049090001	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	A9049090436	
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	B129100001	
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	L0469100001	
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	L0339100001	
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	3U20990031	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	A9049100501	
Ricoh Aficio 550	220, 230, 240/ 50, 60	China	A229-69	A904910xxxx	

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Modification Bulletin

Reissued: 31-Dec-99

Model: SP5/SP5L	Date: 15-Oct-99	No.: MA229044a

Correction

The items in bold italics have been added.

Modified Article: AC Main Haness (Lanier 120V only)			Prepared by: A. Sasaki
From: Technical Service Dept., GTS Division			
Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☐ To improve reliability ☒ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
A229 5600		AC Main Harness – 120V			***121*** 123 ***133***	***31*** 22 ***22***	
	A229 7652	AC Main Harness – 120V ***(LAN)***	1	O/O	***121*** 123 ***133***	***31*** 22 ***22***	

To allow a particular key counter to be installed on the SP5/SP5L at a particular major account customer of Lanier, the AC Main Harness has been changed.

The old harness can be used on the SP5/SP5L for other customers.

MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION SERIAL NO.	REI PRODUCTION SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10		
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17		
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22		
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26		
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27		
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29		
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50		
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	L0469090001	
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	L0339090001	
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57		
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59		
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62		
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64		
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65		
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66		
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67		
Ricoh Aficio 550	220, 230, 240/ 50, 60	China	A229-69		

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Modification Bulletin

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Model: SP5/SP5L | Date: 15-Oct-99 | No.: MA229045

Modified Article: Power Cord Bushing (120V version only)

Prepared by: A. Sasaki

From: Technical Service Dept., GTS Division

Reason for Modification:

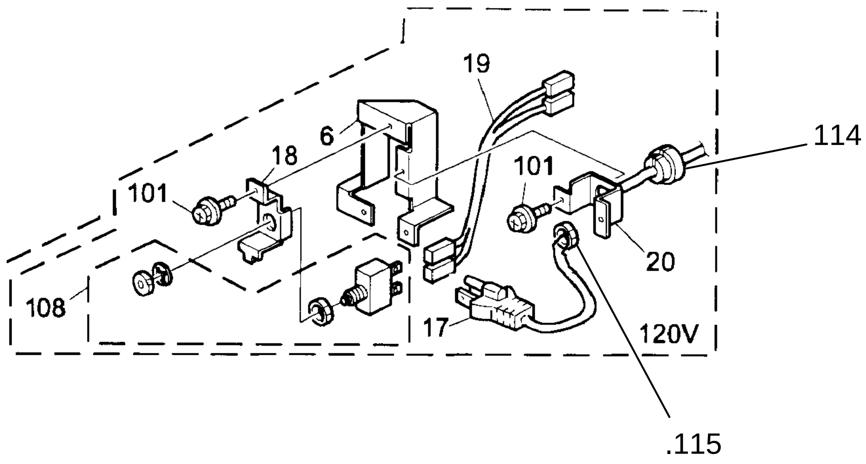
☒ Parts catalog correction
☐ To facilitate assembly
☐ Part standardization
☐ Vendor change
☐ To improve reliability
☐ Other
☐ To meet standards
( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
	1106 0823	Power Cord Bushing ST-16			131	114	*1
	1106 0824	Power Card Bushing GMP-16			131	115	*1

*1: New index

Please add the following parts to your parts catalog.

59. Electrical Section 2 (A229)



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Modification Bulletin

Model: SP5/SP5L	Date: 31-Dec-99	No.: MA229046

Modified Article: Transfer Belt		Prepared by: A. Sasaki	
From: Technical Services Dept., GTS Division			
Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☒ To improve reliability ☐ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
A229 3852	A229 3899	Transfer Belt	1	X/O	93	5	

Symptom

Some of the transfer belts supplied as service parts may have a higher resistance value causing the belt surface to become dirty with toner.

Cause

A transfer belt as a service part is kept in a box with a folded shape, meaning that no tension is being applied to the belt. The belt gradually gets a higher resistance value in this condition.

Solution in the Field

The resistance value could be lowered to a targeted range after the belt is installed and is under tension for a few hours.

Countermeasure

The transfer belts with a lower range of resistance are selected and provided as service parts with a new part number.

The production line installs non-selected transfer belts as before because tension is applied to the belt.

There is a way to distinguish both belts. The sixth digit of the lot number of belt is different, 5 for Production line and 6 for Service parts.

Example	Production line	901145569
	Service parts	901146569

Model: SP5/SP5L	Date: 31-Dec-99	No.: MA229046

MODEL NAME	V/ Hz	DESTINATION	CODE	JAPAN PRODUCTION SERIAL NO.	REI PRODUCTION SERIAL NO.
Savin 9965DP Gestetner 3265	120 / 60	USA, Canada, South America	A229–10		Service Parts Only
Ricoh Aficio 650	120 / 60	USA, Canada, South America	A229–17		Service Parts Only
Gestetner 3265 Nashuatec D465 Rex Rotary 2865	120/ 60	Europe, etc.	A229–22	Service Parts Only	
Infotec 4651MF	220, 230, 240/ 50, 60	Europe, etc.	A229–26	Service Parts Only	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Europe, etc.	A229–27	Service Parts Only	
Ricoh Aficio 650	220, 230, 240/ 50, 60	Asia, Oceania	A229–29	Service Parts Only	
Savin 9955DP Gestetner 3255	120 / 60	USA, Canada, South America	A229–50	Service Parts Only	
Lanier 5255	120/ 60	USA, Canada, S. America	A229–54	Service Parts Only	
Lanier 5265	120/ 60	USA, Canada, S. America	A229–55	Service Parts Only	
Ricoh Aficio 550	120 / 60	USA, Canada, South America	A229–57	Service Parts Only	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Asia, Oceania	A229–59	Service Parts Only	
Gestetner 3255 Nashuatec D455 Rex Rotary 2855	120/ 60	Europe, etc.	A229–62	Service Parts Only	
Lanier 5255	220, 230, 240/ 50, 60	Europe	A229–64	Service Parts Only	
Lanier 5265	220, 230, 240/ 50, 60	Europe	A229–65	Service Parts Only	
Infotec 4550MF	220, 230, 240/ 50, 60	Europe, etc.	A229–66	Service Parts Only	
Ricoh Aficio 550	220, 230, 240/ 50, 60	Europe, etc.	A229–67	Service Parts Only	
Ricoh Aficio 550	220, 230, 240/ 50, 60	China	A229-69	Service Parts Only	

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Modification Bulletin

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Model: SP5/SP5L	Date: 31-Dec-99	No.: MA229047

Modified Article: Toner Supply Clutch	Prepared by: A. Sasaki
From: Technical Services Dept., GTS Division	

Reason for Modification:	☐ Parts catalog correction ☐ To facilitate assembly ☐ Part standardization	☐ Vendor change ☐ To improve reliability ☒ Other	☐ To meet standards ( )

Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
	AX20 0093	Magnetic Clutch	1		119	28	∗1

∗1: New Index

As per field request, the toner supply clutch has been registered as a service part.

53.Drive Section 1 (A229)